

PATTERNS OF CLASSROOM PARTICIPATION AS TEACHING STYLES. A COMPARISON OF SIX NATURAL SCIENCES CLASSES*

*Ángela Camargo-Uribe***

Universidad Pedagógica Nacional, Bogotá – Colombia

*Christian Hederich-Martínez****

Universidad Pedagógica Nacional, Bogotá – Colombia

Abstract

The article proposes a classification of teaching styles on the basis of the description, analysis, and comparison of the patterns of participation of six Natural Sciences school teachers in their classrooms. The classes were recorded on audio and video, and later transcribed and divided into statements. The participation patterns of the six classes were compared with respect to three parameters: distribution of the use of speech, average length of statements made by the professors and discursive density in the class. Results showed a polarity between lecturer and conversationalist teaching styles, which are then discussed in relation to similar categories proposed in the literature on the subject.

Keywords: *teaching style, participation patterns, speech distribution, average length of statements, discursive density.*

Artículo de investigación. Recibido: 10-12-2013, aceptado: 12-03-2014.

* This paper reports some of the results of the doctoral thesis entitled “Interactive, Discursive and, Didactic Dimensions of Teaching Styles. The Case of Natural Sciences”, written by A. Camargo, under the direction of C. Hederich. PhD in Education, Universidad Pedagógica Nacional, Bogotá, Colombia.

** acamargo@pedagogica.edu.co

*** hederich@pedagogica.edu.co

LOS PATRONES DE PARTICIPACIÓN EN CLASE
COMO ESTILOS DE ENSEÑANZA. COMPARACIÓN
DE SEIS CLASES DE CIENCIAS NATURALES

Resumen

El artículo propone una clasificación de estilos de enseñanza sobre la base de la descripción, el análisis y la comparación de los patrones de participación observados en las clases de ciencias naturales dictadas por seis profesores de colegio. Las clases se registraron en audio y en video y luego se transcribieron y dividieron en enunciados. Los patrones de participación de las seis clases se analizaron con respecto a los siguientes parámetros: distribución del uso de la palabra, longitud promedio de los enunciados del profesor y densidad discursiva de la clase. El análisis comparativo permitió constatar una polaridad entre el estilo del conferencista y el del conversador, el cual se discute luego en relación con categorías similares halladas en la literatura sobre el tema.

Palabras clave: *estilo de enseñanza, patrones de participación, distribución de la palabra, longitud media de los enunciados, densidad discursiva.*

OS PADRÕES DE PARTICIPAÇÃO EM AULA
COMO ESTILOS DE ENSINO. COMPARAÇÃO
DE SEIS AULAS DE CIÊNCIAS NATURAIS

Resumo

Este artigo propõe uma classificação de estilos de ensino sobre a base da descrição, da análise e da comparação dos padrões de participação observados nas aulas de Ciências Naturais, ministradas por seis professores de colégio. As aulas foram registradas em áudio e vídeo e, em seguida, transcritas e divididas em enunciados. Os padrões de participação das seis aulas foram analisados considerando os seguintes parâmetros: distribuição do uso da palavra, longitude média dos enunciados do professor e densidade discursiva da aula. A análise comparativa permitiu constatar uma polaridade entre o estilo do conferencista e o do conversador, o qual se discute na sequência com relação a categorias similares encontradas na literatura sobre o tema.

Palavras-chave: *estilo de ensino, padrões de participação, distribuição da palavra, longitude média dos enunciados, densidade discursiva.*

Introduction

The construction of typologies of teaching styles is of great importance for the field of educational research (Zhang and Sternberg, 2006). In fact, the concept of teaching style has been the basis of many explicatory hypotheses regarding different phenomena, which have otherwise been difficult to understand. It has been thought, for example, that differences in teaching methods among educators can explain differences in learning approaches among students (Gargallo, 2008; Grasha, 2002). Teaching styles have also been considered to be important factors for the understanding of differences in students' academic achievement (Felder & Henriques, 1995; Saracho, 2003).

Broadly defined as the habitual or typical way of planning and delivering classroom lessons, many teaching styles typologies have been constructed for different purposes in the past three decades or so (*v.g.*, Evans, 2004; Grasha, 2002; Zhang & Sternberg, 2006). This article belongs to the line of works that attempt to propose teaching styles, specifically from the communicative dimension of the professor's activity in the classroom. Overall, an attempt will be made to propose a classification of teaching styles on the basis of the description, analysis, and comparison of the patterns of participation of six Natural Sciences school teachers in their classrooms.

Framework

Teaching styles and classroom communication

In general, it is said that no message is interpreted independently from the one who sends it (Sperber, 2000). Applying this theory to the classroom, it can be argued that a student's academic achievement is related to the characteristics of the professor as a communicator (Mortimer & Scott, 2003). In fact, the learning process at school not only entails accounting for a series of abstract academic topics, but also meeting a series of participation demands, actions and interactions, derived from the manner in which teachers present, offer or suggest the content to their students. This is the rationale behind a possible communicative based teaching styles typology.

Some teaching style typologies have already been proposed to account for individual differences among teachers that have to do with the communicative dimension of teaching. It may be worthwhile to mention McCroskey & Richmond's socio-communicative styles (McCroskey & Richmond, 1995), Nussbaum and

Tuson's teachers' discursive styles, (Nussbaum & Tuson, 1996) and Mortimer and Scott's communicative approaches to Science teaching (Mortimer & Scott, 2003).

Two main problems can be mentioned in relation to these teaching style typologies. First of all, even though all of them are presented as modalities of teaching, for some of these typologies, for example McCroskey's typology, or Mortimer's typology, there is only one way of teaching that is considered to be the "right" way of teaching. This prescriptive attitude towards styles goes against one of the most appealing features of the concept of style applied to education: its neutrality. Indeed, in contrast to concepts such as effective teaching or good teaching, the concept of teaching style implies differences in the teaching process that do not refer to good or bad teaching (Hederich-Martínez, 2013). From this point of view, differences in the teaching process should not derive in good versus bad teaching. The question here is simply that different teaching styles are suitable for different learning situations (learners, contents, environments, etc.).

On the other hand, even though strong theoretical models of communication, discourse action or teaching interaction support most of these teaching style typologies, they provide relatively little empirical support for them. Thus, we are presented with solid categories of teaching modalities, but few indications of their existence in real life classroom interaction. In Nussbaum and Tuson's typology, for example, categories of discourse genres, derived from Bakhtin's discourse theory, are proposed to describe different approaches to teaching. Even though the model is quite appealing, no empirical evidence is presented to support the categories with examples of classroom verbal interaction to illustrate the points made.

Thus, this paper presents the results of a study that attempts to propose a typology of communicative based teaching styles, keeping in mind both the need for neutrality of the categories proposed, and the existence of empirical support for the proposal. As will be seen later, the typology proposed bears in mind one of the most important features of classroom communication: teacher-student interaction patterns.

Studies of classroom communication

Since the emergence of the socio-communicative perspective for the analysis of communicative events, its application in the classroom situation, especially where documentation of the differences in behavior of the teacher in the classroom is necessary, has been sporadic, but constant. In 1975, Gumperz argued that:

The question of how actors communicate information and influence and persuade others in actual situations is still far from being resolved. Yet, an understanding of teaching as a process of verbal communication depends on a solution to this question. (Gumperz, 1975, p. 1)

Thirty five years later, these disciplines have already established a framework applicable to the identification of the communicative elements that describe a classroom session. This framework is also applicable to the determination of analytical units for the study of specific issues of the communicative process that underlies the teaching-learning activity.

In general, two main lines of work can be distinguished: The studies of discourse in educational activity (Bernstein, 1993; Cazden, 1991; Coll & Onrubia, 2001; Lemke, 1997) and the ethnography of communication in the classroom (Stubbs, 1983; Green & Harker, 1992).

With respect to the discursive approach, studies in this line of work have developed descriptive models of classroom verbal interaction, identifying the most typical discourse structures (Candela, 1999; Cazden, 1991; Edwards & Mercer, 1987; Sinclair & Coulthart, 1975); proposing discourse types (genres) particular to school verbal interaction such as school science discourse, inter-language (during second language learning) or school Math; and going deep into the pedagogic discourse to analyse the complex interactions between the linguistic and prosodic features of discourse and their communicative functions within the educative context (Bernstein, 1993; Halliday, 1982).

With respect to the ethnographic approach, the purpose has been to describe and explain the classroom situation as a communicative event (Ervin Tripp, 1968; Hymes, 1980). Most of these studies keep systematic records of verbal interventions in the classroom, which provides interesting and valuable insight into the type of information provided in the classroom. Indicators such as discursive density of a class, the distribution of participants between professors and students, and the frequency of certain communicative functions in class allow for the construction of clearly differentiated communicative profiles.

Overall, in this study, an attempt will be made to propose a classification of teaching styles on the basis of the analysis of the patterns of participation of six Natural Sciences teachers in their classrooms. In this respect, even though some reference will be made to certain linguistic categories, this study can be included among the studies of classroom interaction as communicative events.

Methodology

This research can be considered as a case study in which a small sample of six Natural Science classroom sessions is audio-visually recorded, transcribed, and very carefully and parsimoniously described and analysed. The patterns observed, then, become empirical categories of style that are to be part of the typology proposed.

The sample of teachers

Six Natural Science professors from two public schools in Bogotá, Colombia, participated in this study. As specified in Table 1, the group is comprised of four (4) female teachers and two (2) male teachers, of different ages, but all with over ten (10) years of experience in the profession. Their names have been changed to Greek pseudonyms, as their real identities are not essential for the study. The six professors teach Natural Sciences, following the official curriculum set for the basic level of secondary education. During their participation in this study, four (4) of the professors taught at the seventh (7th) grade level, one at the sixth (6th) grade level and the other at the eighth (8th) grade level¹.

Table 1. The six teachers participating in the study

Professor	Gender	Age	Grade
Atenea	Female	Between 50 and 60	Seventh
Hermes	Male	Between 30 and 40	Seventh
Artemisa	Female	Between 30 and 40	Seventh
Dionisio	Male	Between 40 and 50	Sixth
Hera	Female	Between 50 and 60	Seventh
Gaya	Female	Between 40 and 50	Eighth

All of the professors included in this research sample amicably and voluntarily agreed to participate, opening the doors of their classrooms to the research team

1 The Colombian school curriculum is divided into three main cycles: basic level of primary education: from first to fifth grades, basic level of secondary education, from sixth to ninth grades, and high school, tenth and eleventh grades.

and their video cameras during three class sessions per teacher. These three sessions correspond to a complete teaching-learning sequence, in such a manner, that it was possible to identify a general scientific topic with which the professor worked during the study. Table 2 outlines the topics observed.

Table 2. Topics covered in the Natural Science classes observed

Professor	General topic of the class
Atenea	The Molecular Structure of Matter
Hermes	Elements of the Periodic Table
Artemisa	Biodiversity
Dionisio	Properties of Matter
Hera	Links in Compound Chemicals
Gaya	Aquatic Ecosystems

The data

An audio-visual recording of a sequence of three classes was made with each participating professor. In this manner, a video bank, composed of eighteen (18) videos per class was obtained. For the consideration of specific declarative characteristics, one of the three classes for each professor was fully transcribed, following the conventions for this. Each transcription was recorded in a written format, in the order of the interventions of the teachers and students during the selected class. The students were not identified individually as their participation in this study was a concern only with respect to their role in the school environment. The transcriptions are accompanied by descriptions of some of the professors' verbal expressions, especially those with an indicial value relevant to the understanding of the transcribed statements.

The six transcriptions which resulted from this process constituted the raw material for the subsequent preparation of an array of data produced by the six professors who participated in the study, as well as their students. This is the initial scheme for the development of a larger database of statements, which allowed for the construction of a profile of the professors from the point of view of their discursive roles.

For the identification of discursive differences, specifically, individual differences among the professors, the statement has been assumed to be a unit of analysis. Therefore, each of the interventions found in the transcribed classes was identified according to its origin (intervention made by the professor or the students). The interventions that originated from more than one participant were subsequently divided into statements. The list of five thousand eight hundred and six (5806) statements produced in the six classes was used to create a database, with the statements in one row, and a series of characteristics of each in the columns. Initially, each statement was classified according to: the professor in charge of the class, the participant who made the statement- the professor or one of the students, and its place in the discursive sequence of the class. Table 3 represents the count of statements in each of the classes analysed.

Table 3. Count of statements produced by participants
of the six class sessions

Professor	Count of statements	Class length (min)
Atenea	527	52:08
Hermes	366	46:14
Artemisa	685	45:48
Dionisio	1097	1:04:27
Hera	2081	1:36:98
Gaya	1062	1:14:26
Total	5806	

Generally speaking, great differences can be observed with respect to the number of statements made in the classes investigated. In Hera's class, for example, the number of statements made was four times that of Hermes' class. It is important to keep in mind that there were differences in the length of the class periods. Consequently, it is useful to consider the number of statements made per minute for each of the classes. Taking this variable into consideration, the differences observed raise questions about the mechanisms of interaction that govern the use of speech during the class. We will talk more about this later on.

Results

Comparison of the patterns of participation in classes

From a socially constructive point of view, the development of an academic course implies the creation of a small learning community. One of the pillars of such a community is the definition of patterns of discursive participation in the class (Rogoff, 1997, among others). This is so, given that the assigned role of the discursive activity is a mechanism of access to learning. The construction of a learning community implies, then, the construction of a small communicative community (Gumperz, 1968), in which defined aspects are found. Such aspects are: how often, how much and how long to speak during the communicative encounters. As stated above, we will call this “patterns of participation in class”.

Given the characteristics of their social role, we can assume that, in the definition of such patterns of participation, professors express their preferences as speakers with a specific discursive role. In this manner, it will be possible to construct profiles of active participation of each one of the professors in their classes. For the concrete case that concerns us, we will analyse the six classes observed with respect to three elements: (1) the distribution of the use of speech in class, indicated by the number of statements made per professor in contrast with the number of statements made by students; (2) the mean length of the statements of the professor in each class, signed by the average number of words per professor, and (3) the declarative frequency or discursive density in class, indicated by the number of statements per minute.

Distribution of use of speech

Each of the statements made during the classes of each professor was classified according to the origin of the statement. This permitted the calculation of the percentage of statements made by the professors and their students with respect to the total amount of messages constructed and transmitted during the session. Figure 1 shows these percentages.

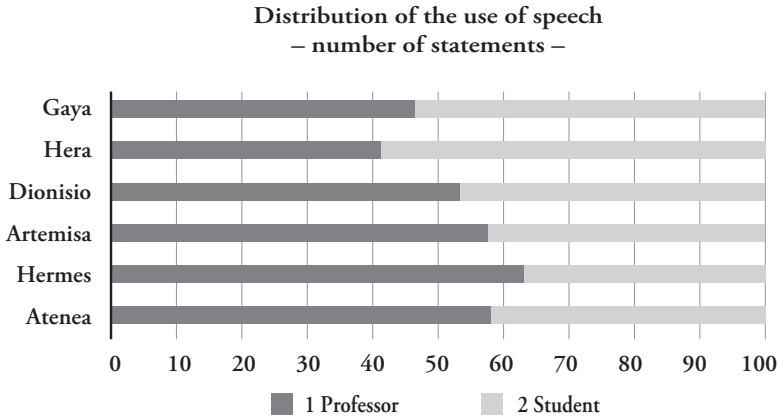


Figure 1. Comparison of the distribution of the use of speech in the discursive space of classes.

Table 4. Count of statements produced by participants of the six class sessions

Professor	Speaker		Percentage differences	Total statements
	Professor	Student		
Atenea	305 (57.8 %)	220 (42.2 %)	16.1 %	527
Hermes	229 (62.5 %)	135 (37.5 %)	25.7 %	366
Artemisa	394 (57.5 %)	289 (42.5 %)	15.3 %	685
Dionisio	585 (53.3 %)	510 (46.7 %)	6.8 %	1097
Hera	860 (41.3 %)	1219 (58.6 %)	-17.3 %	2081
Gaya	493 (46.4 %)	567 (53.4 %)	-7.0 %	1062

Another contrast observed, which can affect the frequency of the use of speech in class, is the distribution of statements according to speaker. As seen in Table 4, while in Atenea, Hermes, Artemisa and Dionisio’s classes, the teachers surpassed the students in the number of statements made, in Hera and Gaya’s classes the opposite occurred: the students made more statements than their teachers.

All of the above configures an interesting panorama of contrasts, which we will try to describe in a comparative manner to identify what Green and Harker (1982) call “patterns of participation” in classes. We will use three descriptive criteria for

this: (1) distribution of statements according to speaker (2) frequency of declarations in classes and (3) mean length of statements made by the teacher.

The comparison will then begin with the analysis of the patterns of participation observed in the classes of the six professors who participated in the study.

In general, it can be observed that the discursive space of the class, composed of the amount of statements made during the session were found to be equally distributed between professors and students. However, as anticipated, marked differences were observed in the frequency of statements made by professors and students in the classes observed.

Based on these differences, the six professors can be divided into three groups. On one extreme, Hera and Gaya's percentages of participation with respect to discursive space in their classes are lower than those of the students (41.3 % and 43.5 % respectively). This refers to professors that encourage their students to speak in class. In the middle, with an even distribution of the use of speech is Dionisio, whose percentage of participation is 53.4 %, while that of his students was 46.6 %. Finally, at the other extreme, Artemisa, Atenea and Hermes produce 58 % to 63 % of the statements themselves.

Based on the first difference observed, a factor of variation in the forms of teaching of the participating professors can be profiled incipiently, related to the major or minor presence of the professor's discourse in the classroom. This factor of variation can be labelled according to the difference between "lecturer" versus "conversationalist" professor.

Initially, "lecturers" would be those who keep most of the discursive space of the class for themselves, and, as a result, would direct it in terms of content and purpose. They would contribute to the class through their discourse. This position of provider is made especially clear with Hermes, who searches for opportunities to make explanations and provide information that permits the development of the theme of his classes. Therefore, in Hermes' class there is a desire to provoke speech in a "legitimate" manner, meaning the allocation of this speech by his partners (in this case, students). Therefore, Hermes frequently uses expressions to motivate his students to ask questions: "Good question from Mr. Vargas" (50²); "So we continue and we ask questions" (102), "See? your classmate has asked a very good question" (176). Note that the intention here is not so much to promote the

2 This number corresponds to the place of each statement in the class transcription for each teacher.

use of speech among the students, but to create a situation in which it is directed towards the professor.

Meanwhile, “conversationalist” professors would be those who allocate more discursive space to their students than to themselves. As a result, they can be seen as professors who are more concerned about their students assuming a more active role in the development of the class. This intention is observed, for example in Gaya’s class, where she seeks the active participation of her students. Statements like: “Make the best effort you can to interpret it, to say it, and to summarize” (75); “That (what a student previously said) is primarily what prevents you from telling me easily what provides oxygen and hydrogen, because it has to be explained chemically”; “Try to explain it”, are indications of this intention. In this case, Gaya’s intention is to put the development of the class in the hands of her students.

Average length of statements made by professor

Another element that describes the general participative scheme of the class is the average length of the teacher’s interventions during the class. To obtain information on this point, each of the statements made by the professors was described according to the amount of words it contained. With this aim, a computation program that does this count automatically was used. Once the count of the number of words found in each statement was done, the average amount of words per statement was calculated for each participating professor of the study. The results of this process are shown in Table 5 and Figure 2.

Table 5. Length of statements by professor

Professor	Minimum length	Maximum length	Average length	Standard deviation
Atenea	1	92	13.37	12.25
Hermes	2	120	22.05	19.57
Artemisa	2	50	14.24	10.99
Dionisio	2	59	11.93	9.99
Hera	2	63	11.65	8.76
Gaya	2	73	12.96	11.08

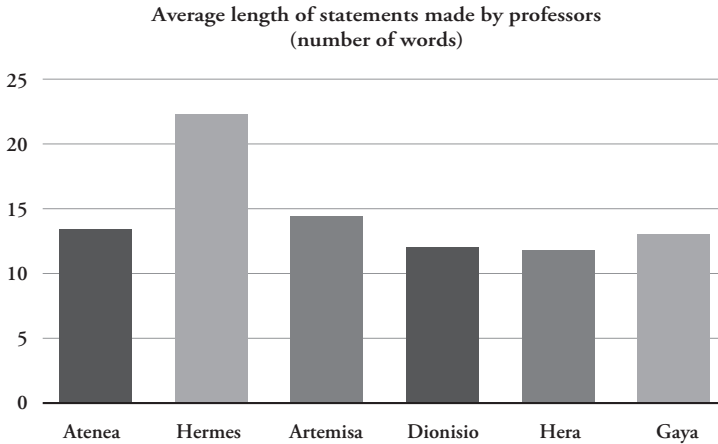


Figure 2. Comparison of the average length of statements made.

The average length of the statements made in the six classes observed is 13.3 words per statement. For the English language, the average length of the statements made by adult speakers is taken into consideration, at seven (7) to nine (9) words (King et al, 1995; Bishop and Adams 1990). For the Spanish language this measure is not clear, but an average of thirteen (13) words represents a general tendency towards the production of long statements. This can be linked to the educational system in which the conceptual complexity of the instructional content mandates the construction of more elaborate statements, and in this case, longer ones.

In agreement with the findings for the relative frequencies of participation in class, it can be seen that a tendency to produce long statements would be indicative of the engagement of the professor with his role as the creator of a determined academic discourse (in this case, scientific discourse). As observed, based on the overall average as a reference point, one of the professors, Hermes, surpasses the group with an average of 14.2, 13.4 and 12.9 words per statement. In order, the others are Artemisa, Atenea and Gaya. Finally, slightly below the overall average are Dionisio and Hera, with averages of 11.9 and 11.4 words per statement respectively.

The large gap between Hermes and the rest of his colleagues with respect to the length of their statements is notable. If this length is considered to be an indicator of high levels of semantic and grammatical complexity, this tendency of Hermes towards the production of large statements would be indicative of a lecturer, one of whose characteristics would be a preference for the use of the discourse of the

academic discipline of reference (in this case, scientific discourse). Some examples that illustrate Hermes' discourse are³:

- (63) H: Ok, note that... look, those that are green and have the red centre are radioactive elements and are additionally synthetic elements. Radioactive elements and synthetic elements indicate that technetium is not an element that can be found...in nature, or on the earth. Because we haven't been to other planets to see what there is. Well... it has been possible via the probe that was sent to Mars and the Moon, but no more, I'll stop talking. We haven't been able to send a spaceship that can land on the surface of another planet and perform a detailed study of all that can be found there. However, at least on this planet, this material does not exist in a natural manner.
- (77) H: Pay attention to one thing. The $5f1$ should go here; it's effectively the protactinium that is $5f2$. What happens with the electron from thorium that is in the $5f$? This electron is not stable within the atom, meaning that thorium can easily lose the electron. Therefore, here, instead of saying $5f1$ as normally would be said, it appears as $5f0$. There is very little energy in the atom to be able to manage it as it is. This is lost very easily and for this we can find here $5f0$.

As observed, Hermes' explanations are similar to the format of scientific discourse, in terms of levels of thematic generality and in the argumentative organization of their content. These interventions made by Hermes contrast with the following, taken from Dionisio's class:

- (201) D: Then pay attention. Matter. The two major categories are: intrinsic properties and extrinsic properties. These help me to recognize or identify...they identify matter (*he writes on the board*), yes? Ok, they're physical and chemical. Here, simply with the smell, with the smell you can identify a substance and we gave many examples last time. You told me that with lemon...
- (205) D: Ok, yes, chocolate. Every day you have chocolate. Here, in the chocolate factory, when at around 5 or 6 p.m., when they begin to carry out the process. The smell of chocolate comes out and can be identified. With an identifying property of the material, is this difficult? Intrinsic properties. With one, two

3 Statements were made originally in Spanish, they were translated for explanatory reasons.

or three properties I can identify the material. But this has to be recorded. Intrinsic: colour, smell, taste, shape. A substance that is very well known with a characteristic. If it is unknown, maybe with two or three properties. (...)

With an explicative intention similar to that of Hermes, the interventions made by Dionisio are made up of a sequence of very short statements referring to abstract concepts, and also including content from everyday surroundings (lemon, chocolate). Their nature is more illustrative than argumentative. It is also important to note that Dionisio maintains a certain interactive attitude through questions asked (“Is this very difficult?”) or reference to things said by the students (“You said lemon”). This makes Dionisio, in contrast with Hermes, more a conversationalist professor, whose characteristics would be the use of short statements, which, with certain frequency, refer to his audience.

Discursive density in classes

The final aspect that will be investigated with respect to patterns of participation in the six (6) classes observed refers to the discursive density in class. Discursive density is understood to be the frequency of statements made, be it by the professor or the students during class. To calculate this, the total number of statements made in class was divided by the duration of the class in minutes. This gave the average of statements made per minute for each of the classes. Figure 3 shows the denunciative frequency of each of the classes observed, independently of the origin of the statement.

Table 6. Number of Professors' statements per minute

Professor	Statements per minute
Atenea	9.8
Hermes	7.8
Artemisa	15.0
Dionisio	17.1
Hera	21.0
Gaya	14.4

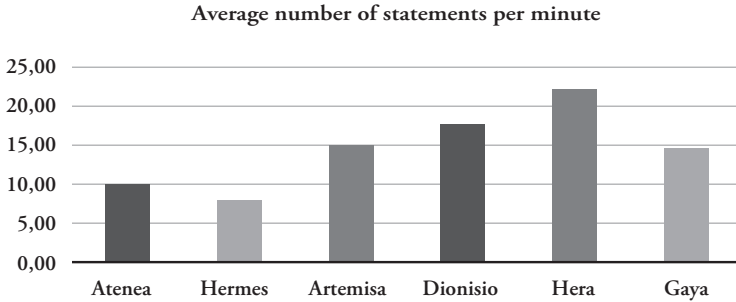


Figure 3. Comparison of the frequency of statements per minute.

The general average for the six classes observed is 15.2 statements per minute (s/m). Based on this, it is possible to arrange the professors in pairs. The teachers whose classes have a higher discursive density are: Hera, with 21.5 s/m and Dionisio with 17.1 s/m. Artemisa (15.0 s/m) and Gaya (14.4 s/m) follow, with a density closer to the general average. Finally, it is possible to place Atenea (10.1 s/m) and Hermes (7.8 s/m), in whose classes a much lower density is observed.

Comparing these results with those found when observing the two previous criteria, it is interesting to note that the six professors are arranged consistently in the same manner. Those professors, specifically Hermes and Atenea, who demonstrated a greater relative use of speech in their classes with longer statements, showed a low discursive density in their classes. In contrast, those professors, such as Hera and Dionisio, with lower levels of use of speech and shorter length of their statements, displayed here higher averages of discursive density in their classes. Can these results be added in reference to the lecturer-conversationalist polarity proposed for the other two categories of the analysis?

Discussion


Based on the assumption that a teaching style typology can be constructed by taking communicative-discursive factors into consideration, this study has analysed and compared discursive data taken in six Natural Science school classes taught by six different school teachers. Three indicators have been the object of close attention: 1) distribution of speech, 2) average length of the statements made by the professor and 3) discursive density.

Table 7 presents the main participation patterns of each class session, using the three variables observed as descriptive indicators of each class. Clear-cut distinctions

can be made between them, allowing the grouping of the teachers in different ways depending on the indicator considered.

For example Atenea and Hermes's distribution of speech and discursive density contrast greatly with Dionisio and Hera's length of statements and discursive density. The remaining two teachers, Artemisa and Gaya, seem to remain in an intermediate position with respect to the descriptors considered.

Table 7. Comparison with respect to the categories considered

Professor	Distribution of use of speech	Average length of statements	Discursive density in the classroom	Dimension
Hermes	Professor speaks a lot more	Long	Low	Lecturer  Conversationalist
Atenea	Professor speaks more	Medium	Low	
Artemisa	Professor speaks more	Medium	Medium	
Gaya	Students speak a little bit more	Medium	Medium	
Dionisio	Professor speaks a little bit more	Short	High	
Hera	Students speak more	Short	High	

Gathering up the findings for the three indicators considered, what can be observed is a certain discursive climate in the classes that could be described as two types of teaching: that of “lecturers”, who use speech more frequently with comparatively complex statements, creating a more silent climate (solemn?) in their classes and that of “conversational professors”, who allow their students to speak in a less complex manner, creating an environment for the increased general use of speech.

Thus, the six professors of our sample can be lined up on an imaginary axis representing the lecturer-conversationalist polarity that we have just defined. In the lecturer extreme of the line Hermes stands out. Taking into account the three variables studied, he is indeed the typical lecturer: he speaks a lot more than his students, he uses long, complex statements to “lecture” his students, and he creates

a silent atmosphere among his students, appropriate for his lectures. Following Hermes on the axis, are Atenea and Artemisa. Although less inclined to transform their classrooms into “lecture rooms”, they also have a clear tendency to control what is said in class. Nevertheless, they differ from each other. While in Atenea’s class long moments of silence were observed, during which the students appeared focused, working on an exercise of application of the topic covered, and the professor walked around observing their work; in Artemisa’s class, in contrast, moments of student-teacher and student-student interaction are more frequent.

Following Atenea and Artemisa, are Gaya and Dionisio. Taking into account the fact that they differ with respect to two of the variables considered in the study (average length of statements and discursive density), one could expect a certain gap between them. There is a feature that describes Gaya’s discourse that makes her more similar to Atenea and Artemisa than to Dionisio. It is the fact that she makes long speeches to her students (this is why her average length of statements is medium) expressing the importance of interacting verbally in class. On the other hand, there is a feature of Dionisio’s discourse that places him far from Gaya and closer to Hera: his classes have high discursive density. Indeed, in Dionisio’s classes everybody talks, not only Dionisio himself but also his students. In this sense, one would say that Dionisio can be put closer to the conversationalist end than Gaya.

Finally, at the conversationalist extreme of the axis Hera can be found. She can be considered the typical conversationalist. In Hera’s class, even individual activities (in which each student is supposed to be engaged in his/her own work) can be described as active environments with students in their seats making all sorts of comments and the professor responding to these comments, or simply dedicated to motivating the students to complete the exercise rapidly.

This polarity constructed, lecturer versus conversationalist, thus refers to the preferences of each professor with respect to the pattern of participation that is favoured in his or her class. The polar category resembles the dialogic-monologic opposition used in constructive pedagogy to describe interaction tendencies that may be present in the classroom during learning (Wells & Mejía-Arauz, 2006, among others).

According to Wells & Mejía-Arauz (2006), in a dialogic classroom the teacher expects some kind of response to what he or she says in class, since interaction is the path to mutual understanding. In contrast, in a monologic classroom, this understanding is presupposed by the teacher whose function is, precisely, to lecture to the student so that the latter achieves understanding. Following Bakhtin’s premises (Bakhtin, 1984), while monologic discourse is important for passing on cultural

meanings, which is important to provide a common cultural background to the students, dialogues are crucial because intersubjectivity is necessary to achieve comprehension.

There is a difference between the lecturer-conversationalist polarity and the monologic-dialogic opposition that may be worth mentioning. While the first one is meant to be related to individual preferences as manifestations of one's own identity (Camargo, 2010), the monologic-dialogic opposition refers to different moments of the learning process, regardless of who is in charge of this learning. Possible connections between monologic teaching and lecturer teachers or between dialogic teaching and conversationalist teachers are still to be established.

For the time being, it is clear that the polarity proposed, lecturers versus conversationalists, has a promising potential of being considered a teaching style dimension. First, the polarity describes two very particular ways of teaching, which may be used to characterize specific teachers. Second, the typology entails a group of characteristics that may be labelled as styles of participation patterns. Finally and more interesting, the lecturer – conversationalist dimension describes two equally functional ways of teaching.

We offer this teaching style polarity to the academic community. We expect it to be a fruitful contribution for a better understanding of what teaching and learning means.

References

- Bajtín, M. M. (1984). El problema de los géneros discursivos. In Author, *Estética de la creación verbal* (pp. 248-293). México: Siglo XXI.
- Camargo, Á. (2010). *Dimensiones interactiva, discursiva y didáctica del estilo de enseñanza. El caso de las Ciencias Naturales* (Unpublished doctoral dissertation). Universidad Pedagógica Nacional, Bogotá, Colombia.
- Candela, A. (1999). *Ciencia en el aula. Los alumnos entre la argumentación y el consenso*. México: Paidós
- Cazden, C. (1991). *El discurso en el aula. El lenguaje de la enseñanza y el aprendizaje*. Barcelona: Paidós.
- Coll, C., & Onrubia, J. (2001). Estrategias discursivas y recursos semióticos en la construcción de sistemas de significados compartidos entre profesor y alumnos. *Investigación en la Escuela*, 45, 21-31.
- Edwards, D., & Mercer, N. (1987). *Common knowledge: The development of understanding in the classroom*. New York: Methuen.

- Ervin-Tripp, S. M. (1968). Sociolinguistics. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (vol. 4, pp. 91-165). New York: Academic Press.
- Evans, C. (2004). Exploring the relationship between cognitive style and teaching style. *Educational Psychology, 24*(4), 509-530
- Felder, R., & Henriques, E. (1995). Learning and teaching styles in foreign and second language education, *Foreign Language Annals, 28*(1), 21-31.
- Gargallo, B. (2008). Estilos de docencia y evaluación de los profesores universitarios y su influencia sobre los modos de aprender de los estudiantes. *Revista Española de Pedagogía, 66*(241), 425-446
- Grasha, A. (2002). *Teaching with Style*. San Bernardino CA: Alliance Publishers.
- Green, J., & Harker, J. (1982). Gaining access to learning: Conversational, social and cognitive demands of group participation. In L. C. Wilkinson (Ed.), *Communicating in the classroom* (pp. 183-222). New York: Academic Press.
- Gumperz, J. (1968). The speech community. *International Encyclopedia of Social Sciences* (pp. 381-386). London: McMillan.
- Gumperz, J. (1975). Teaching as a linguistic process. Paper presented at the National Institute for Education conference on language in the classroom. Washington D. C.
- Halliday, M. K. A. (1982). *El Lenguaje como semiótica social. La interpretación social del lenguaje y del significado*. México: Fondo de Cultura Económica.
- Hederich, C. (2007). *Estilo cognitivo en la dimensión de dependencia-independencia de campo. Influencias culturales e implicaciones para la educación*. Bogotá: Universidad Pedagógica Nacional.
- Hederich-Martínez, C. (2013). Estilística educativa. *Revista Colombiana de Educación, 64*(1), 21-56.
- Hymes, D. (1980). Toward ethnographies of communication: The analysis of communicative events. In P. P. Giglioli, *Language and Social Context*. Middlesex: Penguin Books.
- Lemke, J. (1997). *Aprender a hablar ciencia. Lenguaje, aprendizaje y valores*. Barcelona: Paidós.
- McCroskey, J., & Richmond, V. (1995). *Fundamentals of human communication: An interpersonal perspective*. Prospect Highs, IL: Waveland.
- Mortimer, E., & Scott, P. (2003). *Meaning making in secondary science classrooms*. Philadelphia: Open University Press.
- Nussbaum, L., & Tusón, A. (1996). El aula como espacio cultural y discursivo. *Signos, Teoría y Práctica de la Comunicación, 17*(January-March), 14-21.

- Rogoff, B. (1997). Los tres planos de la actividad sociocultural: apropiación participativa, participación guiada y aprendizaje. In J. Wertsch, P. del Río, & A. Álvarez (Eds.), *La mente sociocultural. Aproximaciones teóricas y aplicadas* (pp. 111-128). Madrid: Fundación Infancia y Aprendizaje.
- Saracho, O. (2003). Matching teachers' and students' cognitive styles. *Early Child Development and Care*, 173(2-3), 161-173.
- Sinclair, J. McH. & Coulthard, R. M. (1975). *Towards an analysis of discourse: The English used by teachers and pupils*. London: Oxford University Press.
- Sperber, D. (2000). La communication et le sens. In Y. Michaud (Ed.), *Qu'est-ce que l'humain? Université de tous les savoirs* (volume 2, pp. 119-128). Paris: Odile Jacob.
- Stubbs, M. (1983). *Language, Schools and Classrooms*. London: Methuen.
- Wells, G., & Mejía Arauz, R. (2006). Dialogue in the classroom. *Journal of the Learning Sciences*, 15(3), 379-428.
- Zhang, L., & Sternberg, R. (2006). *The nature of intellectual styles*. Mahwah, NJ: Lawrence Erlbaum Associates.