

Multimodal argumentation in teacher education courses to connect theory with practice

La argumentación multimodal en los cursos de formación docente para conectar la teoría con la práctica

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Abstract

We start from the current need to critically review the teaching of argumentation in teacher education programs. The methodology adopted is qualitative, with an initial content analysis of the treatment of multimodal argumentation in a selection of U.S. teacher training programs. The models are analyzed using the IARCO model and a transmodalizing proposal of genre is made, consisting of the transformation of argumentative reflection in text commentary. Secondly, a case study report is made based on the contrastive analysis of four texts produced by students of the selected programs. The results show improved indicators of complex thinking; in particular, the crossing of the multimodality variant with that of creative thinking is relevant. The article discusses how the proposal makes it possible to relate theory with practice prior to practicing the teaching profession, and it is concluded that including multimodal argumentation in teacher training may be one more way to solve the disconnection between theory and practice in programs with courses taught without classroom intervention.

Keywords: multimodal argumentation, creativity, comprehension, teacher training, theoretical and practical application.

Resumen

Se parte de la necesidad actual de revisar críticamente la enseñanza de la argumentación en los programas de formación del profesorado. La metodología adoptada es de corte cualitativo, con un primer análisis de contenido del tratamiento de la argumentación multimodal en una selección de programas estadounidenses de formación del profesorado. Los modelos detectados se contrastan con el modelo IARCO y se realiza una propuesta transmodalizadora de género consistente en la transformación de la reflexión argumentativa en el comentario de textos. En segundo lugar, se realiza un informe de estudio de caso basado en el análisis contrastivo de cuatro textos producidos por estudiantes de los programas seleccionados. Los resultados muestran indicadores del pensamiento complejo mejorados; en concreto, resulta relevante el cruce de la variante de multimodalidad con la del pensamiento creativo. Se discute acerca de cómo la propuesta permite relacionar la teoría con la práctica previamente a ejercer la profesión docente, y se concluye que incluir la argumentación multimodal en la formación del profesorado puede ser una vía más para solventar la desconexión entre la teoría y la práctica de los programas con cursos impartidos sin intervención en el aula.

Palabras clave: argumentación multimodal, creatividad, comprensión, formación del profesorado, aplicación teórico-práctica.

1. Introduction

The limitations in the teaching of argumentation have been denounced on several occasions (Caro, 2018; Lopes Piris, 2020), specifically as argumentation has been located in reading, which is reduced to the comprehension of meaning, and in writing, which is limited “to the representation of the ideas of another” (Caro Valverde & Vicente-Yagüe Jara, 2021, 188). In contrast to this siloed treatment of argumentation, in North American models, the application and creation of meaning –as opposed to mere comprehension– and the greater presence of the personal voice –rather than the reproduction of other voices– are encouraged. This happens, among other reasons, because of a methodology in American programs in which the treatment of multimodal argumentation proliferates.

In recent years, in the academic literacy literature in the Spanish context, a model for teaching argumentation has been developed (IARCO, Caro Valverde & González García, 2018, Caro Valverde, Vicente-Yagüe & Valverde González, 2018) that rescues the discursive practice of text commentary to transform it into “text commentary”, giving it a new meaning that allows an enriched treatment of argumentation. If one takes into account that a model consists of “a theoretical construct that attempts to represent the nature and work of some dominant objects; it seeks to unify relevant domains and is a support for the relationship between disciplines; for the case, producing texts in academic situations” (Álvarez Angulo & Ramírez Bravo, 2006, 29), this model fully responds to such a definition. First, because it can be affirmed that, in the tradition of academic writing studies of argumentation, it brings together the cognitive approach of Ferreti & Lewis (2013), the sociocultural model (Nussbaum, 2008, 2011) and the grammatical model, (Lo Cascio, 1991), among other pragmatic and linguistic models on which it is also based. Secondly, because it serves for the production of the discursive genre text commentary situated in the different levels or stages of the Spanish educational system. This model is characterized by treating the treatment of informal argumentation in such a way that, among other elements, the use of multimodal texts with the introduction of everyday discourse for the construction of ideas that comes from the mediation of other voices and one's own voice stands out.

The concern for the treatment of multimodal argumentation in this work is situated in initial teacher training. This is due to the pressing international demand for a theoretical training with a reflective and critical character, oriented towards the practical application of knowledge. From the socio-political sphere, the United Nations urges the education sector with goal 4 of the Sustainable Development Goals (2015-2030), to procure the competence of critical thinking aimed at citizen participation and professional practice:

SDG4-Education 2030 will ensure that all individuals acquire a solid foundation of knowledge, develop creative and critical thinking and collaborative skills, and build curiosity, courage and resilience/ ODS4-Education 2030 will ensure that all individuals acquire a solid foundation of knowledge, develop creative and critical thinking and collaborative skills, and build curiosity, courage and resilience. (UNESCO et al., 2015, p. 26)

The problem about how to connect theoretical knowledge with practical knowledge remains a constant in our literature (Pozo et al., 2006; Pozo, 2017; Pozo et al., 2010) that lacks proposals that efficiently address such a problem. The social commitment of the

research that was carried out in the 80s and 90s to improve the conditions of students with learning difficulties is evident in the proliferation of programs that look to find ways to develop cognitive skills (Alonso Tapia, 1987). In that boom of programs, training detached from knowledge predominated, so the publication of Piaget and Inhelder (1969) repaired the idea of abstract learning as isolated formal thinking and highlighted the importance of prior knowledge involved in the ability to reason. Since then, studies have diversified, delving deeper into the three variables that play a decisive role in learning processes: motivation to learn, strategies for thinking, and prior knowledge to cope with learning.

Without pretending to return to the problematic issue of the development of formal thinking now (Nisbett Ross, 1980; Carretero, 1985; Pozo & Carretero, 1987), the concern for “strategies for thinking” (Harris et al., 2010) has been rescued in order to examine the process of reasoning with an inductive base, in which the starting point is content, to exercise the skills that allow the development of the capacity for abstraction in initial teacher training courses. It is intended to look for this type of courses in U.S. programs, in terms of the development of informal argumentation, which allow connecting theory with educational practice. Hence, the aim of this research is to analyze the treatment of multimodal argumentation in a selection of U.S. teacher education courses, in order to make a transmodalizing proposal of the genre from argumentative reflection to text commentary; and to evaluate in depth how the use or not of multimodality contributes to the connection of theory with practice in teacher education.

Therefore, first of all, we intend to answer the following questions that arise during the process of analyzing the American courses.

- RQ1: what types of materials promote dialogical and critical argumentation?
- RQ2: how should they be used in the classroom in a way that promotes authentic intertextuality in students' productions?
- PI3: what aspects do they have in common with the IARCO model?

Secondly, we start from the speculation that the treatment of multimodality during the process of argumentation facilitates the use of complex thinking and address the main research question: if multimodal argumentation favors the use of complex thinking, that is, can its use in teacher training programs contribute to the use of the cognitive process of categorical induction that allows the connection of theory with practice? Concretely, the research questions of this second part are formulated as follows:

- RQ4: to what extent does the treatment of multimodal argumentation facilitate the use of the three levels of complex thinking: conceptual understanding, practical application and creative thinking?
- RQ5: is there any significant relationship between the use or non-use of multimodality and these levels?
- RQ6: can the treatment of multimodal argumentation promote the transition from theory to practice in teacher education?

This research is based on a broad concept of multimodality. It is understood that the delimitation of which languages are considered multimodal text is complex, so we opt for the solution taken by Baldry & Thibault (2006), who define the concept of

“multimodality” as all the resources that can be used to create texts other than the spoken and written word. Likewise, this research addresses an aspect that has not been dealt with in the existing literature on multimodal argumentation: its relationship with inductive thinking and its possible proposal as a resource to solve the structural dissociation of Spanish initial teacher training programs.

2. Methodology

2.1. Research type and design

The methodology adopted is qualitative in approach, in that it seeks not only to identify what treatment is given to argumentation in U.S. teacher education programs, but it also seeks to deepen its treatment by understanding the design of the programs in the framework in which they are developed, as well as through a holistic understanding of the practices that are promoted. From a total of ten cases contacted, four cases have been selected for their variety, with the aim of maximizing their diversity so that the dimensions studied evidence their contrasts by themselves (Navarro Asencio, 2017). Therefore, this is a collective case study that addresses the treatment of argumentation in four training programs that are different from each other (§2.3.1).

The research design is situated in three central scenarios with their respective research phases and tasks. The scenarios are: i) the U.S. teacher education programs; ii) the genres of argumentative reflection demanded in the final projects of these programs and the genre of text commentary according to the IARCO model; iii) and the complex thinking strategies developed in the final projects.

For each scenario, a specific qualitative research technique is used. First, documentary analysis is used to understand the teacher training programs. This analysis was complemented with virtual course attendance by an external researcher, as well as with unstructured interviews with teachers. Secondly, the activities required to develop the genres of the teacher training programs are compared with the IARCO model. The purpose of this contrastive analysis is to elaborate a genre transmodalizing proposal consisting of the transformation of argumentative reflection into text commentary (§4). Thirdly, a collective case study report based on the interpretative analysis of four texts produced by students of the selected programs is carried out. This analysis is based on the establishment of revised categories in several phases: i) initial formulation of codes that responded to the research questions; ii) reformulation of the codes into categories after ordering the coded data from the analysis of the students' writings and establishing relationships and comparisons among them; iii) and establishment of a matrix of specifications after discussion and agreement among the researchers (Strauss and Corbin, 1990).

2.2. Techniques and instruments

As a whole, the data collection techniques used include:

- Analysis of program documents provided by teachers.
- Observation of classes of different teacher training courses.

- Unstructured interviews with teachers and students about the courses they teach and their program design choices.
- Discourse analysis and coding of student texts based on the establishment of dimensions, categories and subcategories in a matrix of specifications. Frequency counting is done manually by coding the writings and Excel is required to perform the percentage calculations and establish the resulting connections.

As for the instruments, it is worth describing the specifications matrix resulting from a first phase of establishing codes in response to the research questions:

- PI1: to answer what types of materials promote dialogic and critical argumentation, the use of textual and non-textual reference sources is detected. Among the non-textual sources, in turn, are multimodal references and those of interactions lived in previous experiences. These categories and subcategories have been included in the methodological dimension.
- PI2: to answer the question of how materials should be used in the classroom to promote intertextuality, two types of courses in teacher training are detected whose final products determine the development of the program itself. The dimension defined in the matrix is the contextual dimension.
- PI4 and PI6: in order to respond to the way in which the treatment of multimodal argumentation promotes complex thinking and the passage from the theoretical to the practical, the cognitive dimension has been established with three levels of thinking that refer to strategies from less to more complex.

In this way, categories are obtained for the evaluation of the contextualized argumentative texts, which consider: the methodological features of the task (methodological dimension), the type of course in which they are developed (contextual dimension) and the level of complexity of thought based on their possible linguistic marks (cognitive dimension). The hermeneutic matrix created to analyze the four papers (§2.3.3) is shown in Table 1.

Table 1.
Matrix for the analysis of the treatment of argumentation in the final projects of teacher training programs

Dimensions	Categories	Subcategories	Observable indicators
METHODOLOGICAL	Type of source	Textual	Reference to works, authors, etc.
		Not textual: -multimodal	Web pages, magazine with links to videos, audios, etc.
		-interaction	References to previous lived experiences
CONTEXTUAL	Type of course	Theoretical	Theoretical knowledge is pursued
		Research	discoveries are pursued
COGNITIVE	Strategy Type	Comprehension	direct presentation
		App	Explanation
		Creation	Response
			Categorization, structuring...
			example, comparison, selection

Creation of new ideas,
expansion of ideas

Source: Self-made.

First, the observable indicators of the methodological dimension have been established according to a revised broad concept (§1) of multimodality (Baldry & Thibault, 2006). Thus, although the interactions experienced in previous experiences are also considered multimodal texts, they have been assigned a category of their own in order to influence the inclusion or not of the practical and experiential component in teacher training.

With respect to the observable indicators of the contextual category, it has prevailed to typify the courses according to the objective for the context in which they are designed. Courses that pursue the transmission of theoretical knowledge by the teacher and the appropriation of this knowledge by the student will be labeled as theoretical courses. On the other hand are research courses that aim to broaden the knowledge of the scientific community. This contextual distinction marks an important factor for the teaching of the genres developed in each type of course. In this sense, the work adheres to the conception of writing in academic situation (Camps & Uribe, 2008; Uribe, 2017), which makes possible the distinction between academic genres in formal higher education context (theoretical course) and scientific genres of researchers in formal higher education (research course).

For the selection of the observable indicators of the cognitive dimension, we started from cognitive and sociocultural approach studies conducted longitudinally in a North American university (Bazerman et al, 2013, 2014). Specifically, the cognitive observable indicators in Table 1 are based on the classification of the discussion modes they establish for the references analyzed from the interactions between students: direct presentation, explanation, response, categorization, structuring, example, comparison, selection, creation of new ideas, and extension of ideas. In the present study, they have been classified by subcategories that order the indicators according to the degree of difficulty: comprehension, application and creation.

2.3. Phases of research design

2.3.1. First phase: analysis of US Teacher Education Programs

Among the ten teacher training courses observed, four were selected that uniquely combine the following differentiating features: [+classroom intervention/ -classroom intervention], [+theory-practice]/[+research]. The remaining six are: three in type 1; one in type 2; one in type 3; and one in type 4. Thus, it has been suggested that the crossing of the four variables makes it possible to obtain the general modalities of the frequent teacher training courses. Table 2 shows their names according to the specific and differentiating features that characterize them: 1. pre-inductive theoretical; 2. pre-inductive research; 3. theoretical inductive; and 4. research inductive. Each course has been assigned a number in order to facilitate the presentation of the results on the treatment of argumentation in these courses (§3).

Table 2.
 Types of teacher training courses

	No classroom	With classroom
Theory-practice	1. Pre-inductive theory	3. Theoretical inductive
Research	2. Pre-inductive investigative	4. Inductive investigative

Source: Self-made.

Table 3 shows the features of the courses: pre-inductive theoretical and pre-inductive research. Thus, course 1 is characterized by the reading of multimodal texts and collaborative dynamics for learning theoretical knowledge. In the interviews with students, the involvement of these students was highlighted thanks to the varied dynamics used by the teacher to comment on the multimodal texts. By way of example: the activity that stood out was the viewing of a video on the exploratory learning of a baby, and the activity of commenting on it in pairs, first, and then in groups of four, to end with the sharing of what was learned. As for course 2, it is noteworthy that the teacher did not use multimodal sources. However, in the observation of the class carried out by the external researcher, a qualitative improvement could be observed between the first colloquia on research topics carried out in the first sessions, and the final discussions after the presentations of their research presented in the last class.

Table 3.
 Description of the courses without intervention in the classroom

Type of course without classroom	1. Pre-inductive Theoretical Course	2. Pre-inductive Research Course
Aim	Approach to the understanding of theories about how people learn and develop.	Find and use the literature to help pursue research interests for the master's project.
Materials	MULTIMODAL Magazine articles, newspaper articles, books, videos, images, audios.	NOT MULTIMODAL Newspaper articles, books
Activities	Write and draw about personal points of view discussed in various sources. Discuss with colleagues Discuss in small groups Discussion in class	Write an abstract and an evaluation of 2 articles. Peer review of comments. Read and compare each other's draft. Lists of additional titles of articles. Identify a reading to share among all group members.
Final project	Personal reflection exploring the relationships between the concepts discussed.	Annotated bibliography with integrating statement.

Source: Self-made.

Table 4 presents the courses Theoretical Inductive and Research Inductive. It should be noted that in both courses multimodal sources are used; however, the degree of connection with practice is particular to each case. As for course 3, the teacher employs strategies that connect students' life experiences with the theoretical content being learned

(the writing of a feature article). In order to characterize this practical course, the following questions are selected from the teaching materials to activate prior knowledge for the learning of the feature article:

- Think about the ways we have used mentor texts in this class: genre examples before writing assignments, looking at mentor sentences
- How have the mentor texts helped you with your writing?
- What connections can you make between your own experiences with mentor texts and the reading you did about mentor texts?
- How might you use mentor texts with your own students?
- Spend 5-6 minutes writing whatever comes to mind in response to the prompt

As for course 4, the complexity of the connection with practice lies in the fact that it consisted in the development of an action research that was implemented through a project for young people in an educational community. The experience of a student in this course can show this transformative practice from action:

It was a great experience because I had the opportunity to change things on the spot, such as questions and assignment requirements. The end goal is always the same, but how students get there and the support I can give them is what changes.

Table 4.
Description of the courses with intervention in the classroom

Type of course with classroom	3. Inductive Theoretical Course	4. Inductive Research Course
Aim	To explore the teaching of writing in the infant and primary classroom.	Explore through critical observation the problems of educational practice to solve them through an intervention in the classroom based on data.
Materials	MULTIMODAL Magazine articles, newspaper articles, books, web pages.	MULTIMODAL Newspaper articles, books, classroom data.
Activities	Read texts and analyze their generic features. Discuss with peers online and in person Participate in writing groups Reflect on the experience of writing, on the experience of belonging to a group of writers and on the transfer of both experiences.	Research plan that includes research approach and collected data. Data analysis. Reflection on the inquiry process. Presentation of the results in a professional forum.
Final project	Argument on a topic that was previously developed in a feature article.	[Design of a YPAR project (Youth Participatory Action Research), to be carried out with students, implementation of that project] and reflection on the process.

Source: Self-made.

2.3.2. Second phase: description of the genres of argumentative reflection demanded in the final projects of the American programs and contrastive analysis with the text commentary genre according to the IARCO model

2.3.2.1. *Description of final projects*

Table 5 shows the four discourse genres requested in the courses described (§2.3.1).

Table 5.
Final projects of the four types of courses

	no classroom	with classroom
Theory-research	Personal reflection exploring the relationships between the concepts discussed.	Argument on a topic that was previously developed in a feature article.
Research	Annotated bibliography with integrating statement.	Design of a YPAR project (Youth Participatory Action Research), to be carried out with students, implementation of that project and reflection on the process.

Source: Self-made.

All four have in common the argumentative and personal character. For the four genres, they have been provided with bibliographic sources, so they have the possibility of integrating citations in their texts. In the evaluation of the four, the construction of a personal text will be considered, as well as the contribution of ideas generated from one's own perspective.

2.3.2.2 *Contrastive analysis with the IARCO model*

The IARCO model for multimodal argumentation (Caro Valverde & González García, 2018) has been validated for the development of critical and creative thinking, hence it is of special interest to relate it to the treatment of multimodal argumentation in the U.S. programs.

To respond to PI3, the IARCO model has in common with the courses described the completion of the first two activities:

- Interpretive reading of texts.
- Synectic discussion to invent hypotheses.

The proposal to introduce the explicit work of argumentation in the classroom through the IARCO model connects with the activities of the analyzed programs:

- Interpretive reading of textual, multimodal and interactional sources of experience
- Synectic colloquium in pairs, small groups and large groups to invent hypotheses.

With this transformative proposal for the treatment of argumentation of the IARCO model, the aim is to enrich the argumentative discourse from all the disciplines that underpin it (Caro Valverde & González García, 2018, 129):

- Rhetoric: [with the contribution of] discursive strategies of thought.
- Sociolinguistics: [with the consideration of] social context.
- Linguistics: [with knowledge of the elements involved in] communicative enunciation
- Psycholinguistics: [with explicit work on the] processes of interpretation and argumentation.

2.3.3. Third phase: complex thinking strategies that are developed in the final projects

This phase was carried out as follows: four texts corresponding to each of the four types of courses were selected. The criterion for their selection was that they should respond in a prototypical or exemplary way to the teacher's request. So much so that they are usually the texts that are used in the following academic year as models. None of them is masterly or excellent; on the other hand, we have tried to make them texts of average quality, so that they would be close to what is usually written in each assignment.

After the selection of the texts, the coding of the texts began. The detection of the codes responds to the research questions: multimodality, intertextuality and abstract thinking. Then, dimensions, categories and subcategories were established in a matrix of specifications that allow the distinction of other aspects that intersect with the features identified in the texts, based on the genre requested by the teacher and the peculiarities of the course in which it is developed. The categories were reformulated by contrasting the analysis among the researchers.

Finally, with the categories established, the assignment of these categories to the ideas transmitted in the texts began. Each idea was considered a thematic unit; sometimes it formally coincided with a simple or compound sentence, but in most cases each thematic unit is developed in a paragraph. In this phase, the categories assigned to each analyzed idea were verified by obtaining a total coincidence between the analyses of each researcher. The frequencies were counted manually.

Finally, to obtain the percentages, Excel was used to establish the significant relationships between the categories observed: type of strategy (comprehension, application and creation), types of sources (textual, multimodal and interaction) and types of courses (pre-inductive theoretical, pre-inductive research, theoretical inductive and inductive research).

3. Results

The results show the significance established in the crossing of two variables: types of sources and types of complex thinking strategies. These results are presented disaggregated by course and in their total figures. The order of presentation of the results, therefore, is: types of sources, thinking strategies and relationship between both variables.

First of all, when observing the variable of the types of sources, it is clear that non-textual sources predominate in inductive courses 3 and 4. As for the overall count, the non-textual sources are predominant in the four courses is notorious, with the total sum of 79 textual sources versus 30 textual ones. This can be seen in Figure 1:

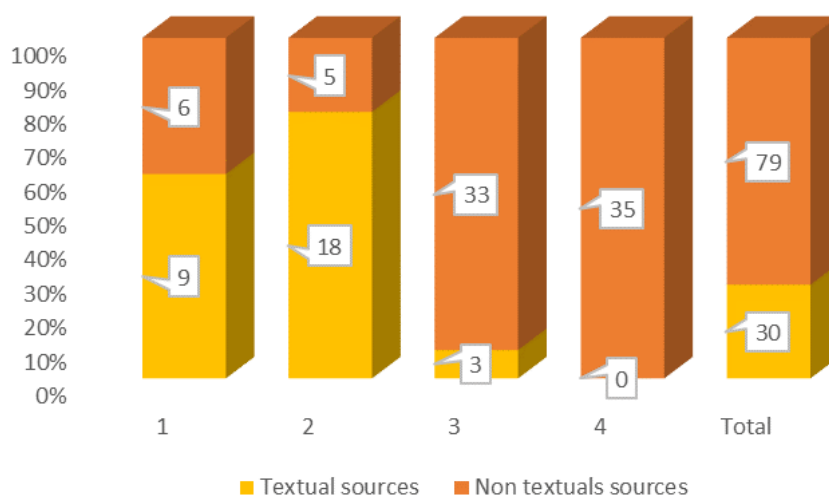


Figure 1. Textual/non-textual sources by courses/total.

Secondly, the non-textual sources can be broken down into two types: multimedia and interaction sources based on previous experiences. The non-textual sources, previously mentioned, refer to multimodal sources in the theoretical inductive course 3 and to interaction sources in the investigative inductive course 4. It should also be noted that, among the three, the action-related approach predominates (44 interaction, 35 multimedia and 30 textual). All these descriptors by course and in total are shown in Figure 2.

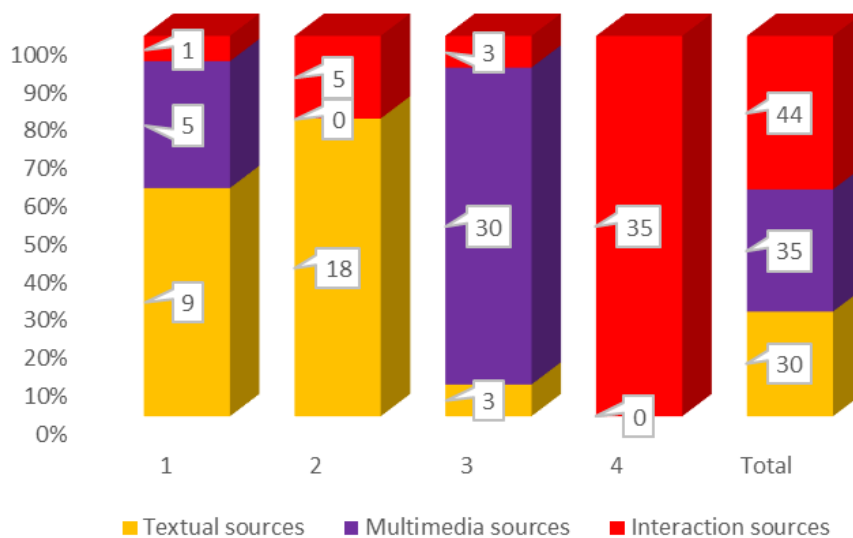


Figure 2. Types of sources by courses/total

With regard to the variable of thinking strategies, once again courses 3 and 4 stand out. In course 4, the dominant variable is “application” (26), as opposed to “comprehension” (5) and “creation” (4). On the other hand, in course 3, the “creation” variable predominates (26) as opposed to “application” (9) and “understanding” (1). Finally, it can be observed in Figure 3 that the dominant variable is “application” (48), vs: “creation” (43) and “understanding” (18). Among these results, it is noteworthy that in course 1

“understanding” (8) predominates and that in course 2 the strategies of “creation” (10) and “application” (9) stand out almost equally.

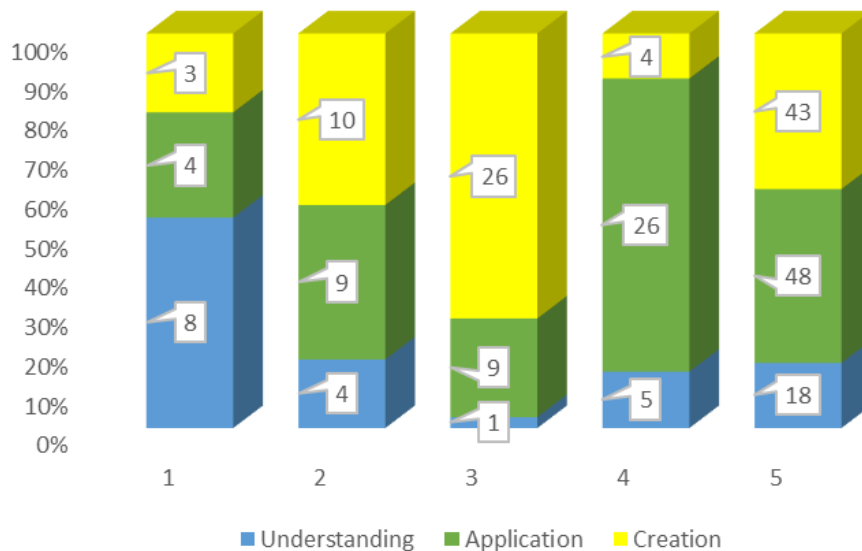


Figure 3. Types of strategies by courses/total

To understand in depth what has happened, it is necessary to analyze the relationships between the two variables. For this purpose, textual sources are presented in Figure 4 and those of non-textual sources in Figure 5. In Figure 4, the most striking feature is the lack of textual sources in the inductive research course 4. It also stands out that textual sources only develop creative thinking in course 3. As for course 1, in order to understand the predominance of the “comprehension” strategy, as opposed to the other strategies discussed in Figure 3 (“application” and “creation”), it is observed that it is the textual sources that facilitate the development of “comprehension” (6) in course 1 significantly, as opposed to “application” (4) or “creation” (3).

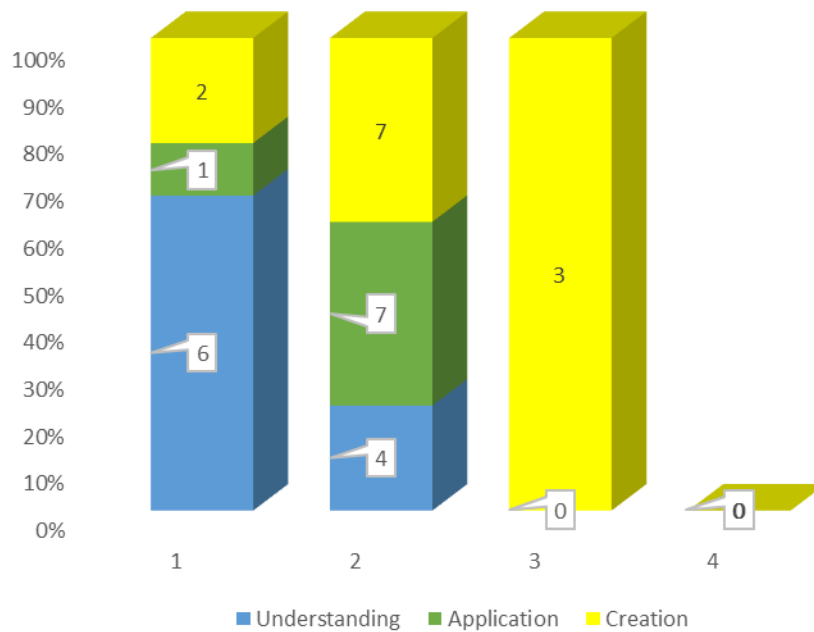


Figure 4. Types of textual source strategies by courses

However, as can be seen in Figure 5, it is curious that it is the non-textual sources, specifically multimodal sources, that allow the development of “application” (3) in this same course 1, as opposed to “comprehension” (2) and “creation” (1).

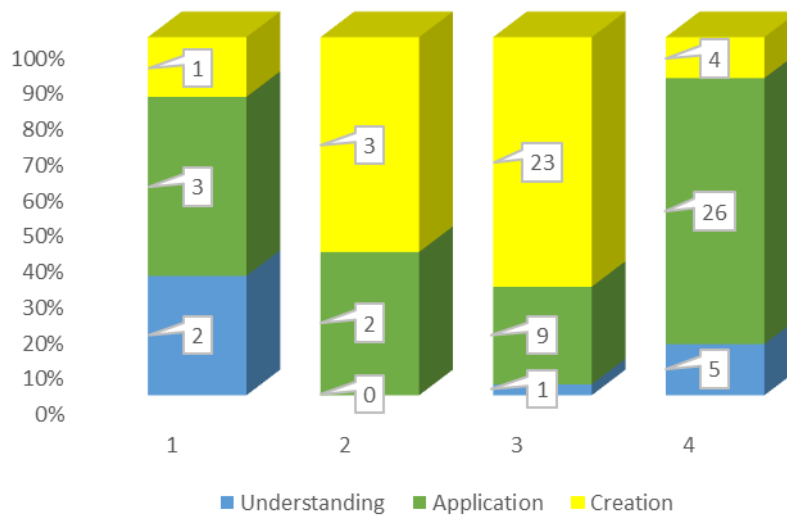


Figure 5. Types of non-text source strategies by courses

Together with the two significant findings commented on in courses 3 (textual sources develop creativity) and 4 (textual sources are not used), it is important to contrast these data with those produced in the crossover between the types of strategies and the reference to non-textual sources. In this case, it is noteworthy that in course 3, in which multimodal

sources predominate, “creation” is significantly developed, while in course 4, in which interaction sources predominate, “application” is significantly developed.

In sum, combining the particular findings of each course regarding the strategies employed, the following results are obtained:

- With respect to the “comprehension” strategy, it is confirmed that it predominates in its crossing with the pre-inductive theoretical type 1 courses and with textual sources. At the same time, as confirmed in Figure 3, it is the least used strategy.
- With respect to the “application” strategy, it can be said that it predominates in its crossing with type 4 courses, with non-textual sources; and type 2, with textual and non-textual sources. Both courses have in common the descriptor: [+research].
- With respect to the “creation” strategy, it can be said that it predominates in its crossing with type 2 and 3 courses, and with both textual and non-textual sources. In this case, in spite of the fact that the courses do not share any indicator, the in-depth knowledge of both programs and assignments allows us to affirm that they also have in common the descriptor: [+research], since the teacher of course 3 poses the theoretical topic as a question to be investigated.

Figures 6, 7 and 8 show the three strategies specifically in relation to each type of source. Thus, it corresponds:

- the “comprehension” strategy with textual sources
- the “application” strategy with interaction sources
- the strategy of “creation” with multimodal sources

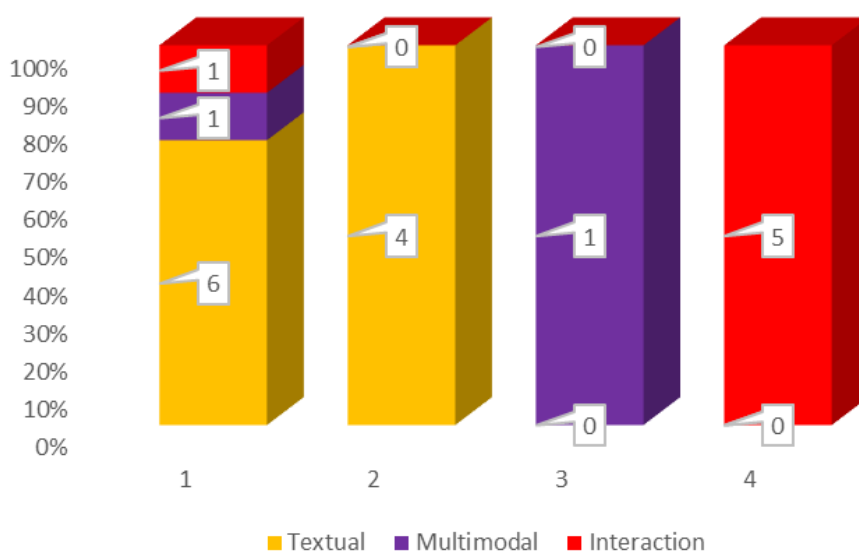


Figure 6. The “comprehension” strategy according to the type of sources by courses

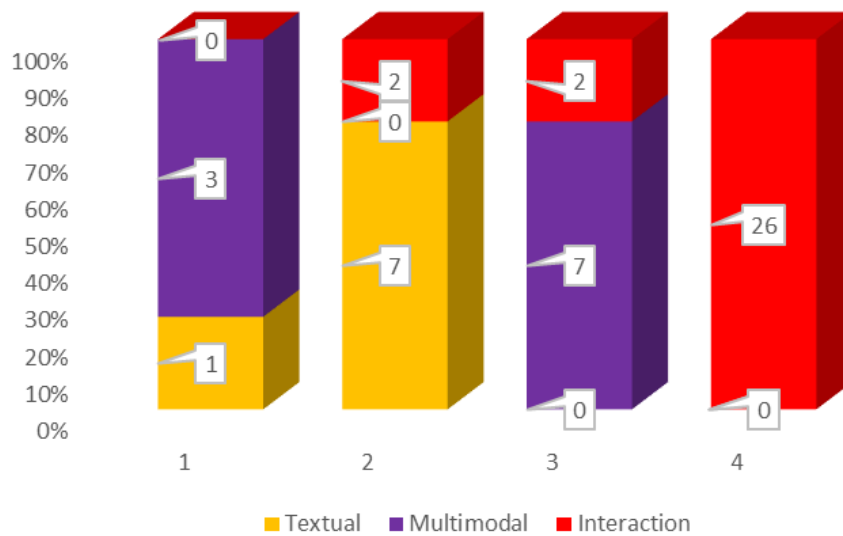


Figure 7. The “application” strategy according to the type of sources by courses

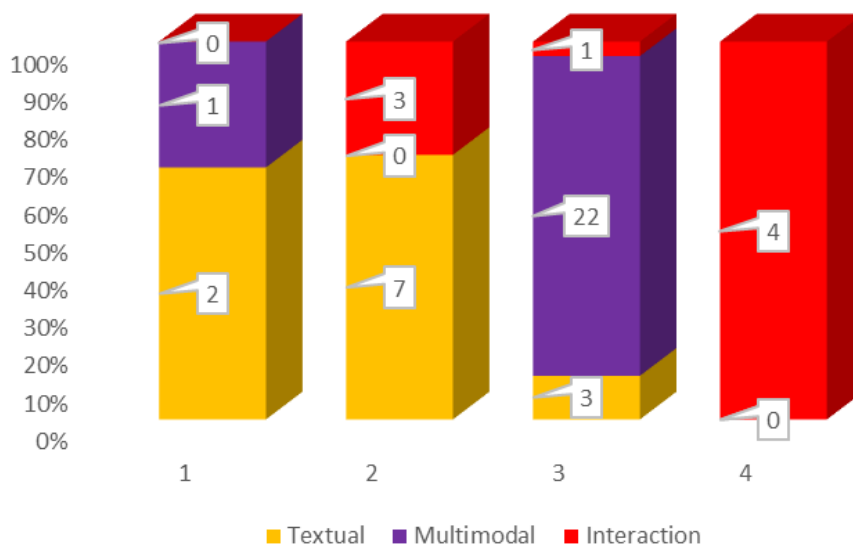


Figure 8. The “creation” strategy according to the type of sources by courses

Thus, it is obtained that the multimodal source is the one that reaches a higher complexity of thought. At the same time, it is observed that, after interaction, the second source used in the development of the “application” is also the multimodal one.

4. Discussion

Once the appropriateness of the treatment of argumentation in these courses has been analyzed, since it was found that interaction sources improve the “application” strategy and multimodal sources favor the “creation” strategy, this section enriches the proposal for the treatment of argumentation in order to relate theory with practice, prior to practicing the teaching profession. A realistic proposal has been designed in relation to

the majority of initial teacher training programs in which theoretical courses are not simultaneous with classroom practice.

This is followed by a genre transmodalization consisting in the transformation of argumentative reflection –genre used in North American programs–, into text commentary.

The enrichment of our courses with multimodal texts, which can supplant classroom experiences at the level for which training is being received, can allow us to break down the barriers that were denounced at the beginning of this work: reading whose ultimate goal is the comprehension of meaning and writing that only reflects the ideas of another (Caro Valverde & Vicente-Yagüe Jara, 2021). The proposal is presented in relation to the phases of the IARCO model:

Table 6.

Transmodalizing proposal of the argumentative reflection genre based on the text commentary genre (IARCO)

IARCO (Text commentary)	Argumentative reflection in pre-inductive theoretical, pre-inductive research, theoretical inductive and research inductive courses.
Interpretative reading of texts	Interpretative reading of textual, multimodal and experiential interaction sources.
Synecitic colloquium to invent hypotheses	Synecitic colloquium in pairs, small groups and large groups to invent hypotheses.
Connection between texts and contexts	Connection between texts and contexts
Commentary plan	Commentary plan
Argumentative writing	Argumentative writing
Deliberative revision	Deliberative revision in pairs
Rewriting and presentation	Rewriting and presentation in large groups

Source: Self-made.

5. Conclusions

By way of closing, the following is an attempt to return to the research questions and to highlight the conclusions reached after the research carried out in the present work. It is important to note that they cannot be related to other previous research due to the novelty of the present work, as highlighted in the introduction.

The questions of how to implement the proposal (§2.3.1) and how to bring materials that promote multimodal argumentation into the classroom (§2.3.2) have been described previously. Among the types of materials that promote dialogic and critical argumentation, the use of non-textual sources versus textual reference sources is especially revealed.

To answer the question of how materials that promote intertextuality should be used in the classroom, two types of courses in teacher training are detected. While the most conducive is undoubtedly the one in which classroom intervention is carried out, it has also been commented how this experience can be favored, in its absence, by the use of multimodal sources.

Next, it is worth reflecting on the questions that relate the categories investigated on complex thinking and the sources that favor it. It has been found that the treatment of multimodal argumentation promotes complex thinking and the passage from the theoretical to the practical. Thus, it can be concluded that multimodal argumentation in teacher training can be one more way to solve the disconnection between theory and practice in programs with courses taught without classroom intervention.

As for the limits of the work and future lines of research, the sample observed here should be expanded so that these results can be generalized. The present work opens a path with the proposal of the categories offered for the analysis of argumentative texts. The continuity of this line of research supposes offering other modalities that improve the treatment of argumentation itself, so that none of the three edges is left unworked: neither comprehension, nor application, nor creation.

Finally, to truly see if introducing other modalities can lead to improvements in argumentation in contexts beyond North America, it is necessary to implement the approaches similar to those observed in the focal instructional settings in other international contexts. The resulting student writing should then be evaluated to determine the potential of these approaches.

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