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Teaching and Learning at the Undergraduate Level: Knowledge, Ideas, and Writing Practices in Academic Contexts

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The objective of this paper is to share a series of studies that we have carried out over the past ten years about students' written production and its relationship with learning at the undergraduate level. We have been engaged in a recursive research process in which the initial findings led to the postulation of new research questions that allowed us to continue the investigation of other dimensions related to the same problem. In this way, we were able to obtain a more ample, complete and complex perspective of the issue of undergraduate writing and learning. Results indicate that the relationships between writing and learning are not straight, linear or simple and that it is necessary, from a pedagogical perspective, to create new instructional contexts that encourage students to develop their writing skills and, at the same time, write with the purpose of learning.

Disciplines like cognitive psychology, linguistics and psycholinguistics have examined the effects of writing on learning, the processes that students go through when writing, the features of students' texts and the discursive strategies that students use to produce them. Findings of studies within and across these research areas have contributed to the design of teaching strategies aimed at improving students' performance in the production of academic texts (Carlino, 2005; Mazzacaro & Oliva, 2008; Morales, Tona, & Tonos, 2007; Peralta, Dell Elicine, & Nothstein, 2008; Valente & Moyano, 2006; Vélez et al., 2007; Vázquez & Jakob, 2007, among others).

Several studies have shown that the writer's internal and external conditions affect the quality of the processes and products of academic writing; to name only some examples, the type of writing task requested; the type of text demanded by the task; the rhetorical situation; thematic knowledge; knowledge

about written language; cognitive strategies; students' representations of the task and the way in which they approach it; and teachers and students' conceptions about reading and writing and their relationship with learning (Applebee, 1984; Bereiter & Scardamalia, 1987; Hayes & Flower, 1980; Langer, in O'Loonney, et al., 1989; Tynjälä, 1998; Vázquez & Miras, 2004; White & Bruning, 2005).

In light of the above contributions, this paper aims to share four studies developed over the last ten years about writing and its relationship with learning at the undergraduate level. The research process has been recursive in nature, in which the initial findings led to the formulation of new research questions that allowed for an examination of other dimensions of the issue of writing and learning at the undergraduate level to obtain a wider, more complete and complex perspective.¹ Here, we share the questions that gave rise to the studies, the designs developed for their investigation, and the ways in which the results were interpreted.

The first three studies took place in natural undergraduate classroom environments where disciplinary contents were taught. Participants in the studies were students of different cohorts who were enrolled in the third-year course 'Didactics I' of the educational psychology program at Universidad Nacional de Río Cuarto. Only a few modifications were made to the composition of the student groups for the purposes of this research. The fourth study included the teachers from the same program. While it is acknowledged that the learning tasks that require students to compose a text are based on reading reference sources, our research was focused on written production.

Effects of Writing Academic Texts on Learning Scientific Concepts (Study 1)

Studies that have addressed the relationship between writing and learning argue that writing can promote learning, as long as the writer engages in the higher-level cognitive processes that allow them to delimit, produce and refine knowledge instead of simply reproducing information that is already available (Bereiter & Scardamalia, 1987).

Tynjälä, Mason and Lonka (2001) observe that previous theories considered the content that was readily available in the writer's long-term memory. However, from a learning standpoint, it can be argued that writers may reproduce or restructure their own mental representations based on incoming information from texts.

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Based on this idea, the initial research sought to evaluate how writing academic texts influences learning scientific concepts (study 1).² For this purpose, two groups of 36 students each were exposed to different conditions, all of whom were enrolled in the third-year course 'Didactics I' of the educational psychology program at Universidad Nacional de Río Cuarto. One group (group A) carried out a series of writing tasks on topics that were listed on the course description, while the other (group B) participated in commentary and oral discussions around the same topics. Students of both groups worked independently on a writing task before and after the treatment period. In all cases but the first implementation,³ writing tasks involved the integration of information selected from the source material. Thus, the activity entailed, or, at least encouraged, participants reading multiple sources so they could create their own texts, that is, operations that are typically involved in discourse synthesis (Segev-Miller, 2004; Spivey, 1996; Spivey & King, 1989; Vázquez, 2008).

The data was exposed to a categorical analysis that allowed for a quantitative treatment. The purpose was to detect conceptual change between students' pre- and post-treatment written products. As concepts were extensively developed in each student's text, an initial decision to segment the data was to identify and define *units of linguistic-conceptual significance*, that is, a textual unit of variable length that encompasses different levels of linguistic structure (phrase, sentence, paragraph) and that contains definitions and thematic developments linked to the conceptual axes pre-established in the writing tasks.

To compare the pre- and post-treatment writing task, the treatment of the concepts of *literacy*⁴ and *acquisition of the alphabetic system* were examined, both of which were developed in 72 student texts, 36 of each group (A and B), 18 corresponding to the pre-treatment writing task and 18 to the post-treatment writing task. The categories used to define each concept were constructed on the basis of the related, specialized literature and the units of linguistic-conceptual significance developed while analyzing the pre- and post-treatment writing tasks. Scores (0-3) were established for each category and the highest value was considered the best score, that is, the response that illustrated the best conceptual level. The categories are shown in Tables 9.1 and 9.2.

2 For a complete version of the study, see Vázquez, Pelizza, and Jakog (2001).

3 The first task had a diagnostic function of inquiring into students' previous knowledge in relation to the topics under study.

4 Translators' note: In the context of this article, 'literacy' serves as the most approximate translation of the concept of 'alfabetización' in Spanish, which, as inferred from the criteria included in table 1, the authors characterize as reading and writing processes that respond to a rhetorical situation, fulfill a communicative purpose, involve the control of notation forms and communication technology, and are subjected to broader socio-historical conditions.

Table 9.1 System of Categories and Indicators for the Concept of Literacy

Dimension	Categories	Indicators	Score
Literacy	Complete description	Definition of reading and writing processes. Communicative function and discursive situation. Control of notational forms and communication technology and/or discussion of the concept. Socio-historical perspective.	3
	Incomplete description	Control of notational forms and communication technology and/or discussion of the concept. Socio-historical perspective.	2
	General competences and abilities	Knowledge of reading and writing. General communicative competence. General competences (another knowledge).	1
	No answer		0

Table 9.2 System of Categories and Indicators for the Concept of Acquisition of the Writing System

Dimension	Categories	Indicators	Score
Acquisition of the writing system	Constructivist model complete description	General constructivist thesis and description of the process of acquisition of the alphabetic system.	4
	Constructivist model partial description	General constructivist thesis or description of the process of acquisition of the alphabetic system.	3
	Constructivist model incipient description	General statements without specification of the constructivist thesis nor of the process of acquisition of the alphabetic system.	2
	Environmentalist/maturationist	Ambientalist and maturationist conceptions.	1
	No answer		0

The comparison between pre- and post-treatment writing tasks revealed that both groups made considerable progress in incorporating new concepts, which means that no specific gains were identified for the group that participated in successive and numerous writing tasks. Still, it was not possible to claim that a complete conceptual organization had taken place in all cases, but rather that students' previous ideas, which first surfaced during the pre-treatment stage, were restructured to varying degrees throughout the process of the experiment. These results provided evidence that the relations between writing and learning are far from direct, linear and simple, as shown by the contradictory findings obtained by numerous studies (Rosales & Vázquez, 1999).

The quantitative analysis of students' texts that was aimed at estimating the influence of writing in learning made it possible to identify other dimensions of the problem and repurpose the initial research questions. Among the dimensions of the research issue that were eventually cut out were first, those related to the linguistic-conceptual aspects of students' texts (study 2); secondly, those concerning students' approaches to the writing task and to the chances that they may change them through instruction (study 3), and lastly, those related to the instructional contexts in which writing tasks are required (study 4). Each of these aspects will be discussed below.

Quality of the Text and Learning (Study 2)

Considering the findings of study 1, it is legitimate to ask whether students are capable of enacting the linguistic and conceptual procedures necessary to write their own texts by drawing content from source texts, as they were requested to do in study 1. It was expected that the analysis of students' written productions would shed light on this question.

Thus, the following question arose for study 2: what are the features of students' texts when they are asked to compose a text by using operations of selection, organization and integration that are typical of discourse synthesis? (Segev-Miller, 2004; Spivey, 1996; Spivey & King, 1989; Vázquez, 2008).

To answer this question, a qualitative analysis of 12 texts, 6 from group A and 6 from group B, randomly selected from the set of 36 post-treatment writing tasks of study 1 was carried out using a set of pre established dimensions and categories (Vázquez, 2005) that articulated conceptual and linguistic aspects; these included the text's intrinsic quality, that is, its visible structure and textual resources, and the text's linguistic construction as resulting from the use of source texts, which considered literal reproduction and/or reformulation.⁵

5 The system of dimensions and categories presented in this study is a reformulation

The analysis revealed two levels of textual organization: fragmented texts—the majority—of which students generally reproduce in order to juxtapose information, and integrated texts, in which students achieve more advanced levels of linguistic-conceptual elaboration of information (Vázquez & Jakob, 2006, 2007).⁶

Fragmented texts are characterized by students' literal reproduction of source texts or by paraphrasing in the form of cumulative juxtaposition of information; in them, a textual structure is barely outlined. In terms of thematic progression, there are frequent disconnects between the paragraphs and even within them. There is a fragmented treatment of certain issues, which are addressed in a discontinuous fashion throughout the text without making explicit the necessary links. Frequently, the transition to the conclusion is introduced by a word that does not logically correspond to what was developed in previous parts of the text, which means that the last paragraph, which should serve as the conclusion of the work, instead presents a new problem that was not discussed in the paper previously. Strategies intended to lend coherence to the text are not always well used, for instance, anaphoric references are affected by the lack of agreement between the references and the pronominal forms used to replace them.

Integrated texts present two levels of integration: partial and complete integration. Partially integrated texts present problems with the organization and the treatment of the information. Regarding the organization, they show discursive disruptions, either between the constituent parts of the text or between consecutive paragraphs. In what pertains to the treatment of information, they present conceptual errors and problems related to linguistic-conceptual processing of the kind described above for fragmented texts. The biggest difference between fragmented and partially integrated texts is the predominant use of paraphrasing and the sometimes successful attempts to establish links that ensure the thematic progression of the text in the former.

Texts that are fully integrated reorganize the information contained in the sources in a clear structure; the content of each of the parts matches the structure of an academic text. Transition paragraphs between different topics allow the ongoing flow of the information provided by the text. Most paragraphs are constructed in a way that represents previous information in order to develop it in the following paragraph. Abundant and diverse transition words are identified, most of them accurately used at the beginning and inside the

of the one presented in Vázquez, Pelizza, and Jakob, 2001.

6 The characterization of the texts presented in this study is a reformulation of a that presented in Vázquez, Pelizza, and Jakob, 2001.

paragraphs. There are no major issues with cohesion, but some difficulties persist with the hierarchical organization of the information inside the paragraphs due to the excessive use of subordination without punctuation that clarifies the reading. The text presents both relevant and adequate content that responds to the problems stated in the prompt.

In most texts, knowledge is accumulated in the form of poorly articulated information and the almost literal reproduction of the topics of the source texts, which coincides with findings of numerous studies (Alvarado & Cortés, 2001; Fernández, 2006; Lahoz & Cuadros, 2006; Riestra, 1999; Rosales & Vázquez, 2004; Salvo de Vargas, Isuani de Aguiló, & Montes de Gregorio, 2002; Zalba, 2002, among others).

The data from these studies suggests that undergraduate students do not usually engage in productive work with source texts, an activity that would allow them to appropriate knowledge in a constructive and meaningful way and that facilitates cognitive reorganization.

Effects of Teaching on Students' Approaches to Writing and the Texts They Compose (Study 3)

Studies 1 and 2 revealed that writing tasks, as numerous, diverse and demanding as they may be, do not guarantee in and of itself the production of high-quality texts; thus, it can be assumed that the weaknesses observed in students' texts resulted from the use of inadequate procedures and from the lack of awareness of the features of an academic text.

Thus, study 3 sought to answer the following questions: how do students approach the writing tasks? What strategies do they employ to respond to assignments that ask for the production of a written document? Is it possible to teach and learn writing strategies in the undergraduate classroom? Does the acquisition of these strategies impact the quality of texts? These questions triggered another research process whose purpose was on the one hand, to inquire into the strategies that students use to compose texts in which they are asked to integrate and reorganize source texts, and on the other, to evaluate the effects of an instructional intervention that is aimed at promoting the acquisition of strategies that may positively impact the quality of the texts.

These research questions and goals build on Hayes and Flower's (1980) conceptualization of the writing process, which discriminates between writing processes and subprocesses, and which other authors have conceptualized as self-regulation strategies (Graham & Harris, 1996; Zimmerman, 1989, 1998; Zimmerman & Bandura, 1994; Zimmerman & Risemberg, 1996). Based on this perspective, it is possible to identify differences in the ways in which

undergraduates approach the task of writing academic texts depending on the specificities of these strategies. Different ways of approaching the writing task can be interpreted as writing approaches (Biggs, in Lavelle & Guarino, 2003).

The methods of study 3 consisted of assigning a writing task before and after an instructional intervention.⁷ Before the intervention, participants were asked to compose an academic report⁸ with the purpose of obtaining empirical evidence about the ways in which they approached the task of composing a text and about the text's quality. During the instructional intervention, a series of tasks were developed to promote the learning of strategies for composing a text. Post-intervention made it possible to access the ways in which students regulated the texts at this stage and the progress they made in their products.

Both at the pre- and post-intervention writing stages students produced texts in pairs, which were formed according to their overall academic performance. Two groups were high performance, two were medium performance and two were low performance. The purpose was to gain access to the writing processes adopted by the groups by analyzing the verbal exchanges during the act of composing; exchanges were recorded and then transcribed for analysis. Protocols were obtained and segmented in episodes to account of the writing processes and subprocesses (Camps, 1994; Hayes & Flower, 1980). Both pre- and post-intervention writing tasks were carried out during four-hour sessions and were part of class assignments.

Data analysis made it possible to identify planning and translating strategies used by the students when writing reports, which were categorized as three distinct approaches to the regulation of the text, that is, as three particular ways in which students tackle the writing task.⁹ These approaches were named as follows: a) improvised-reproductive; b) anticipatory surface-level weak development, and c) anticipatory deep-level strong development (Vázquez & Jakob, 2006). These approaches were elaborated on the basis of antithetical pairs combining three dimensions: the absence or presence of planning strategies (improvised-anticipatory), translating modes (reproductive-developed) and the level of information processing (superficial-deep).¹⁰

7 For a complete version of the study, see Vázquez and Jakob, 2006.

8 An academic report is understood as an expository kind of writing that requires the integration of diverse source texts built around a central topic.

9 In alignment with the study by Torrance, Thomas, and Robinson (1999), it was observed that the process of revision runs almost simultaneously with that of translation. Any process that was used in the final version of the text was centered on superficial aspects. This study did not find differences in the process of revision depending on the adopted approach.

10 A later study found student narratives that reflect the same three approaches (Vázquez, 2008; Vázquez & Jakob, 2007).

The first approach (improvised-reproductive) is marked by ideas that are discovered randomly as students explore the reference texts. The process of translating is characterized by students copying or reproducing the information they select from the source texts. The second approach (anticipatory surface-level weak development) presents scarcely elaborated and conceptually imprecise planning strategies, which evidence weak relationships between the statements; a paraphrasing strategy is adopted in the translating stage. Despite the fact that the protocols show an attempt to establish links between the parts of the text, notorious distortions and conceptual confusions were found and seem to be indicative of a superficial treatment of the content.

The third approach (anticipatory deep-level strong development) is marked by the elaboration of more complex plans, as evidenced in the greater number of conceptual units and in the kind of relationships established between them; students make use of a planning strategy throughout the writing process as a control mechanism. A paraphrasing strategy and a concern for obtaining an integrated text predominate during the translating process. The fact that the texts produced under the third approach present a greater adjustment to the conceptual meaning of the sources may be indicative of a deeper treatment of the information.

The planning and translating processes in which students engage at pre- and post-intervention periods were comparatively analyzed in order to account for the progress they made in the approaches to writing as a result of the instructional intervention; likewise, the quality of the resulting texts at each stage was compared according to the categories developed for study 2.

Regarding the approaches to the writing task, it can be stated that all groups made progress regardless of their level of performance. Students who wrote a text according to approach 1 at pre-intervention (the two groups with low-performance and one with medium performance) adopted approach 2 at post-intervention. Similarly, those students who adopted approach 2 at the pre-intervention (one with medium performance group and the two groups with high-performance) used approach 3 at the post-intervention.

Results pertaining to text quality were mixed. Although some groups made noteworthy progress, others made no changes. At the pre-intervention writing stage, all groups produced a fragmented text, except one high-performing group who wrote a partially integrated text. At the post-intervention writing stage, the two low-performing groups produced texts that were partially integrated; of the two medium-performing groups, only one made progress towards a partially integrated text, while the other showed no changes. Lastly, one of the two high-performing groups made remarkable progress

towards producing a fully integrated text, while the other remained at the level of partially integrated textual organization.

Although findings indicate a link between progress in the approaches to writing and students' level of performance, this does not seem to be correlated with an improvement in the quality of the texts. Considering the three approaches, low-performing students make progress from approach 1 towards 2, while medium and high-performing groups move from approach 2 towards 3. In terms of the quality of the texts, however, progress made from fragmented texts at pre-intervention to partially integrated at post-intervention was observed across all levels of performance. Likewise, absence of change between pre- and post-intervention is visible in groups of different performance.

In conclusion, it could be argued that the instructional intervention facilitated a clear progress in terms of the approaches that students adopted to regulate the writing task; however, this progress did not translate into differences in the quality of the final products.

Based on these findings, proposals of pedagogical innovation intended to develop strategies for composing texts were drafted, reinstating the value that writing has as a means for learning specific disciplinary content (Vázquez & Jakob, 2007). At the same time, new research questions were raised about the type of writing assignments that are demanded of students at the undergraduate level, considering that the type of writing task seems to be critical for fostering learning opportunities, as shown by numerous studies that have examined the relationship between writing and learning (Applebee, 1987; Schumacher & Nash, 1991; Tynjälä, 1998, among others).

Writing Tasks: Types of Assignments and Teachers' Conceptions (Study 4)

Reading and writing tasks that stimulate active thought processes and lead to transformations of information have the potential to generate constructive learning. It is in this sense that Tynjälä (2001) argues that different forms of writing and writing assignments implicate different types of activities and thought processes, which in turn promote different (and diverse) types of learning. On the other hand, the type of writing task that teachers assign is shaped by the way in which they conceive of writing, teaching and learning. That is, if teachers think that teaching is about transmitting information and learning is about reproducing it, it is likely that they will assign writing tasks that involve repetition; if, on the contrary, they understand learning as a constructive process, it is likely that they will promote tasks that involve restructuring the information in the texts (Tynjälä, Mason, & Lonka, 2001).

With this in mind, study 4 targeted the courses of an undergraduate program with the aim of answering the following questions: what type of writing assignments are usually required of undergraduate students? Which writing products are more frequently demanded? Which cognitive processes do the assigned writing tasks promote? What specificity of instruction do they offer? The main purpose of this study was to characterize the writing assignments that students are required to do in an undergraduate program and to analyze teachers' underlying conceptions about the tasks and the cognitive processes demanded by them.¹¹ The study was designed in two phases; the first involved data collection and the analysis of the writing assignments that demanded the production of a written text. The second phase made use of interviews to access teachers' perceptions.

During the first phase, assignments that were required as part of the undergraduate program in educational psychology at the School of Human Sciences at Universidad Nacional de Río Cuarto were collected; each assignment met the following characteristics: a) it was provided to the students in a written format or read aloud for them to write it down, b) it demanded the production of an academic text, and c) professors considered it to be typical in the context of the courses that they teach.

Around 100 writing tasks from first to fifth year were analyzed, which were not equally distributed across the cohorts of students nor across the set of undergraduate courses. The unit of analysis was the writing assignments required by the teachers. Three dimensions were delimited for the analysis: the level of cognitive processing, the specificity of instruction for the task, and the text type required.

The literature in composition and reading comprehension and the work on information processing by Miras, Solé and Castells (2000) agrees that cognitive processing exists on a continuum whose opposite ends correspond to the lowest and highest levels. Those assignments that require the reproduction of information demand less cognitive work than those that require the organization of information; the former presumes a superficial type of processing whose goal is to increase knowledge by literally repeating information, a process that is linked to knowledge telling strategies. Instead, assignments that demand reading comprehension and are oriented towards the construction of meaning entail a deeper approach and are linked to knowledge transforming strategies. The specificity of instruction for the task refers to the level of detail regarding the work that the student must carry out, whether the steps that

11 A preliminary version of this study was presented in Vázquez, Pelizza, Jakob, and Rosales (2006)

the student must follow are clear and whether the final product is explicitly defined or not in the task (Gimeno Sacristán, 1988).

Based on these remarks, the following categories were attached to the three dimensions of analysis above mentioned: a) level of cognitive processing demanded by the task: recognizing, recalling or reproducing information; establishing internal relations by reorganizing elements or preexisting and explicit information; producing new information and ideas by transforming their own knowledge (Miras, Solé, & Castells, 2000); b) specificity of instruction for the task: specifications about the content, topic of and source texts and about procedural, rhetorical and contextual requirements, including the context of enunciation, procedures, expected product, evaluation criteria, composing conditions, time and length (Miras, Solé, & Castells, 2000); and c) type of text declared or implied in the assignment: answers to questions, reports, monographs and projects, among others.

As was expected, the results shown in table 3 indicate that the most frequently demanded tasks are those that require the reorganization of information in the form of answers to questions and reports, and which included scarce specifications about the expected process and textual product (Vázquez et al., 2006).

The data suggests that answers to questions or prompts are most frequently requested in first, second and fourth year, usually asking students to reorganize information and for the most part lacking orientations for the resolution of the task.

Reports are most frequently demanded in third year, where they usually prioritize reproducing information over reorganizing it, and in fifth year, where both levels of cognitive processing coexist. In most cases, assignments include specifications about composing conditions, the length of the text, the topic, and the textual product, the last two in very general terms.

Findings from the first phase of the study revealed qualitatively different writing assignments, some of them involving a superficial level of cognitive processing and some of them entailing a more complex conceptual processing; it was also possible to identify which courses demanded them. Building on that, the second phase of the study conducted interviews with six professors who taught undergraduate courses at different levels. Each of them facilitated writing assignments that were in contrast; that is, two professors of freshmen courses proposed assignments that were different from each other and so did the two professors of intermediate and senior courses.¹²

12 Preliminary results of this phase of the research were presented in Vázquez, Pelizza and Rosales, 2007a and 2007b.

Table 9.3 Most Frequently Requested Texts, Level of Processing, and Specifications by College Year

Text type	Level of processing	Specifications
Responding to prompts or questions (first year)	Mostly organizing/reorganizing To a lesser extent, reproducing and generating.	None
Responding to prompts or questions (second year)	Mostly organizing/reorganizing To a lesser extent, reproducing and producing.	In only one case specifications are made about time, composing conditions, textual product (short statement) and procedure (general indications).
Writing a report (third year)	Predominance of reproduction over reorganization. To a lesser extent, production.	Predominance of specifications about composing conditions, length, topic and textual product (the last two in very general terms).
Responding to prompts or questions (fourth year)	Predominance of organization/reorganization	None
Writing a report (fifth year)	Predominance of reorganization and reproduction. To a lesser extent, production.	Predominance of specifications about composing conditions, length, topic, and textual product (the last two in very general terms).

Data analysis sought to examine the purposes of the writing tasks, the relationships between writing and learning, the textual products and cognitive processes triggered by the task, and the representation of the problems in students' texts. It was also aimed at gaining access to the orientations that teachers provided for the fulfillment of the task.

The analysis revealed that teachers agree in their aim of promoting reflection and thought processes in the students, although they word it with different levels of precision in relation to the writing task. On the other hand, despite a general agreement, two different conceptions of the writing tasks arose from their narratives:

- i. *The writing task as a means to record and evaluate information.* Under this conception, writing is considered only as a means for recording information and support for students' study; for teachers, it works as a

means to control and evaluate students' learning. Teachers who align with this conception propose writing practices that are underpinned by teaching traditions, on which they scarcely reflect and whose potential cognitive processes they cannot clearly envision. Accordingly, writing assignments do not provide specifications for the resolution of the task nor orientations or interventions on the production and revision of the written text. Writing tasks of minimal complexity stem from this conception, for example, answers to questions or prompts.

2. *The writing task as a tool for conceptual transformation.* Without disregarding the previous understanding, writing is also conceived as a tool for the promotion of meaningful and deep learning. Teachers who adhere to this conception propose conceptualized writing practices, which are part of the pedagogic apparatus of their courses, and which are coherent with the approaches and content adopted in them. Accordingly, assignments provide more specifications about the writing task. Teachers, on their part, develop actions aimed at supporting the resolution of the task, they are more aware about the textual and conceptual aspects demanded by the assignments, and they intervene on them during the writing process. Out of this conception grows highly complex writing tasks that imply deep information processing, like monographs, reports based on the analysis of research papers, research projects, and professional projects and reports.

Conclusions

The results of these studies suggest that multiple factors are implicated in the relationship between writing and learning, on which the following remarks are made:

1. *The process of acquiring strategies to compose the text is constructive in nature;* it develops in an interaction between the teacher, the student and the task. Students assimilate regulation activities gradually as they assign them meaning and pertinence for the task (Martí, 2000). Because this process involves time and cognitive effort, partial acquisitions that do not immediately reflect in the quality of the text are to be expected.
2. *The act of composing academic texts requires writers to control linguistic skills.* Academic texts show specific requirements regarding the organization, prioritization, and integration of ideas; as well as the use of formal language to express expository, explanatory, and/or argumentative sequences (Arnoux, Di Stefano, & Pereira, 2002). Although composing texts is a very frequent demand at the undergraduate

level, the reflection on the prototypical features of the academic text, particularly in what pertains to its micro and macro structural aspects, does not seem to be promoted enough.

3. In regard to *teachers' conceptions of writing and tasks*, findings indicate that only those teachers who conceive of writing as a tool for promoting meaningful and deep learning assign writing tasks; in them, they clearly specify the requirements that the text must fulfill, they make the processes they intend to promote explicit, they identify textual problems of conceptual and linguistic order, and they develop systematic interventions to orient students during the writing process. This link between conceptions of writing, the writing task, and learning has been noted by other studies (Mateos, Martín & Villalón, 2006; Tynjälä, Mason & Lonka, 2001).
4. In what pertains to the *most frequently requested texts*, findings suggest that answers to questions and reports are the most prevalent texts at the undergraduate level, as shown by other studies (Solé, Castells, Gràcia, & Espino, 2006). Nonetheless, each text presented an internal variation whose nuances should be further examined in a more detailed analysis.
5. It is fair to note that the *representations that students make of the task* inform the strategies that they use, which then have an effect on the quality of their texts. Multiple factors inform those representations, such as the writer's previous experiences, the conditions of production, the expectations, the author's purposes, and the commitment to the activity. While it was not an object of these studies, it would be convenient to examine how the immediate context of production of the task affects its interpretation (Castelló Badía, 2000; Flower, 1990; Vázquez & Miras, 2004).

The series of studies presented in this article underline the need to address priorities that range from educational actions to the complex relationships between writing and learning, creating instructional contexts that would allow students to learn to write, and at the same time, to write with the purpose of learning.

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Reflection

This article tells the story of a ten-year research project focused on the relationship between writing and learning. In it, we advocate for gaining a deeper

understanding of the particular ways in which the relationship between writing and learning becomes evident within the typical academic writing activities of a university classroom.

What's interesting to emphasize is that although the preliminary results obtained in each of these studies did not meet the initial expectations we set, they nonetheless opened up new questions, leading to new ideas, and suggesting new approaches to research design. This paper describes a journey that began with the analysis of students' written products and which allowed us to discover how students organized their texts in more or less adequate ways. These findings led us to then inquire about the different approaches that students take to address these tasks, and we relied on these approaches to define the strategies used in student written production. In a follow up study, we found that some students struggled to apply these writing strategies. We then created an instructional sequence that emphasized the teaching of these writing strategies, and then analyzed the impact of applying the written strategies on conceptual learning.

Our findings suggest that the application of productive strategies and the quality of the resulting texts are mediated by the type of task solicited of the students. These tasks contain underlying ideas that instructors hold about writing, learning, and the relationship between both processes.

Fifteen years after having written the article, and using a dialogic approach between the theoretical framework and empirical data, we contend that the relationship between writing and learning are not direct nor linear, and that:

1. The progress in the acquisition of the strategies is gradual.
2. It is possible to find advances in the strategies of production that do not immediately reflect in the quality of texts.
3. Pedagogical interventions are necessary because applying effective strategies is not a spontaneous process.
4. Promoting learning through writing depends on the type of task that students are solicited.

Given the impressive advances in digital technologies and multimodal texts in recent years, it would be interesting to analyze in future studies if these phenomena have modified the writing practices, the conceptions of students and instructors regarding writing practices, and also the relationship between writing and learning.

– Alicia Vázquez