

Study on the training of future teachers in reading comprehension and written expression strategies*

Gabriel Herrada Valverde¹

ORCID: 0000-0002-9275-7515

Rosario Isabel Herrada Valverde²

ORCID: 0000-0002-1878-8882

Abstract

For the construction of knowledge in the university environment, reading comprehension and written expression are essential competences, and also constitute the necessary base to carry out activities such as processing information. As many students of universities of Education will be teachers, we wonder if these students will really acquire adequate skills in reading comprehension and written expression to successfully carry out their professional work. This study is presented in two research designs. The first one takes into account the formative moment as a variable; it analyzes the competences in written comprehension and expression of the students accessing the Bachelor's Degree in Primary Education, and also of those who, after its completion, have accessed to the University Degree in Psychopedagogy. Thus, we consider the group of students of the Bachelor's Degree in Primary Education as the Pre-test measure; the formative process before becoming students of the University Degree in Psychopedagogy as the treatment or test; and these actual students as the Post-test measure. The second one considers the growing influence of ICTs on learning environments, so it analyzes whether there are remarkable differences according to the stimulus variable presented - printed texts and hypertexts - when applying the abovementioned skills to summarize as an academic task. Despite of the fact that the students of the University Degree in Psychopedagogy have received three years of academic training as future Primary Education teachers, the results showed the same lack of reading comprehension and written expression skills as those at the beginning step of the Bachelor's Degree in Primary Education.

Keywords

Higher education – Teacher training – Reading, writing.

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1- Universidad de Salamanca, Salamanca, España. Contacto: gabriel.h.valverde@usal.es

2- Universidad de Almería, Almería, España, Contact: rherrada@ual.es



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Introduction

The starting point of the present article is rooted in the growing concern of lecturers in the Bachelor's Degree in Primary Education about the difficulties of their students, i.e. future teachers, to use basic skills in reading comprehension and written expression for the construction of knowledge and psychoeducation. This situation has been already shown in previous studies (HERRADA; QUINTERO, 2012; ARROYO; JIMÉNEZ-BAENA, 2016; DUGAREVA; DIEGUEZ; PÉREZ, 2014; RELLO; MERCADER; SIEGENTHALER; PRESENTATION, 2018), as well as in PISA or PIAAC surveys: the *Programme for International Student Assessment* (MECD, 2015) and *Program for the International Assessment of Adult Competencies* (MECD, 2013) respectively and show a gloomy picture of the future because of the requirements of the students to excel in competencies to become knowledge builders, especially in the university context.

Considering the abovementioned aspects, this study has a double purpose. Firstly, the analysis on the competencies in reading comprehension and written expression of students accessing to the Bachelor's Degree in Primary Education, investigating if those students who have faced previous university and academic learning and tasks, as those who have accessed to the University Degree in Psychopedagogy, show some improved command on the strategies involved in text comprehension and expression. And secondly, the consideration of the increasing influence of Information and Communication Technologies (ICTs) on learning environments and, consequently, the analysis on whether there are remarkable differences according to the stimulus presented when applying the abovementioned strategies in an academic task of knowledge access. This stimulus was the presentation of a printed text and a hyperlinked text, and the task consisted of generating a summary after reading both types of texts.

Based on this double purpose, the research establishes a series of aims resulting in different hypotheses. The objectives are as follows:

- Describe whether students beginning the Bachelor's Degree in Primary Education have the basic skills in reading comprehension and written expression for the knowledge construction.
- Identify the level of basic skills in reading comprehension and written expression of the students after the completion of a Bachelor's Degree in Primary Education and initiate the University Degree in Psychopedagogy.
- Compare the level in basic reading comprehension and written expression skills in the two sample groups: Primary Education and Psychopedagogy.
- Verify the influence of the text types (printed and hyperlinked) on both samples, considering the use of the strategies of reading comprehension and written expression necessary to carry out the summarization.

Theoretical framework

Different authors have highlighted the fact that communicative competencies, including written expression and spelling skills, are not assumed enough by university

lecturers (SANELEUTERIO, 2018). For this reason, the author points out the needed adaptation of the curriculum to improve teacher training in these areas. Being in unison with this author, it is essential to analyze whether these students are skilled enough in reading comprehension and written expression, as these competences are fundamental to train their students in the future. In addition, it is not only to train future lecturers in reading comprehension and written expression techniques, but it is also necessary that they shall be able to evaluate these skills too (RUIZ; VÁZQUEZ; SEVILLANO, 2017).

Before approaching the research, some key aspects shall be described; such as the role of microstructure, macrostructure and superstructure in reading comprehension; the -need to use techniques that allow the reader to manage their cognitive resources better during the reading process; and the description and analysis of the synthesis strategies used by mature readers to summarize texts.

Models of text comprehension

Text comprehension is the result of the interaction between the explicit text expressions and the reader knowledge. Some authors have analyzed how mental constructions depend as much on individuals' representation of textual information as on the reader's prior knowledge (TIJERO, 2009). Among the best known models we find the one presented by Van Dijk and Kintsch (1983), and it states that the readers process the text information founded on three levels of representation: surface code, text base, and situation model. Subsequently, Kintsch (1988) proposed the construction-integration model as the readers construct two types of mental representation during the reading process: the textual representation or base, which is close to the text meaning, and the situational representation, which refers to the context the textual content is framed. In recent years we can highlight models such as the MD-TRACE proposed by ROUET and BRITT (2011), which assume that readers use *internal* resources, such as prior knowledge of the subject matter of the text, the mental representation of the document's content; external resources, such as *external* task specifications, the set of sources and documents used; and the products generated by readers, such as summaries or concept maps.

The function of textual microstructure and superstructure in the extraction of the macrostructure

The reader, as s/he reads a text, extracts predicative propositions or outlines formed by a verb and at least two arguments; and s/he also determines the degree of existing coherence between them at a local level. This brings on the elaboration of the microstructure. Thus, it is essential to recognize or infer the two types of relations, thematic and structural, that occur between a proposition and the previous and subsequent proposition (VAN DIJK, 2006).

Apart from identifying propositions and determining the degree of coherence among them, the reader must recognize which of those propositions are textually relevant and establish the coherence among them globally. It requires accessing to a deeper semantic level, called macrostructure, in order to identify and hierarchically reorganize the essential ideas

(ESCORIZA, 2006; VAN DIJK, 2006). Finally, the textual superstructure or organizational form of the text gains a fundamental role as it provides some keys about which microstructure propositions could form the macrostructure; facilitating, in addition, a scheme, adapted to the different textual typologies (problem-solution, causal, comparative, argumentative, etc.), to store the essential ideas in an organized and hierarchical way.

Cognitive management of the reading process

When the reader reads, does not process the text information at once, but in several parts or processing cycles that retain a reduced number of propositions for a limited time. Taking this as a reference, Sánchez and Solé (2009) and Sánchez, García and Rosales (2009, 2010) consider that a text can hardly be processed at a local and global level simultaneously. According to this, McNamara, Ozuru, Best and O'Reilly (2007) state that in order to understand complex texts it is necessary to simplify the task of reading, starting from self-regulating strategies such as re-reading, underlining and taking notes in the text, constructing conceptual maps and summarizing. Different authors have analyzed the use of metacognitive approaches to improve reading comprehension levels (RAMÍREZ; ROSSEL; NAZAR, 2015; CABERO-ALMENARA; PIÑERO; REYES, 2018). Different studies, such as the one presented by Vega, Torres and Del Campo (2017), indicate that morphological processing plays a central role in developing reading skills.

Synthesis strategies used by mature and immature readers

There are remarkable differences in the synthesis strategies used by mature and immature readers. Thus, immature readers tend to have comprehension problems both locally and globally, and therefore elaborate a composition closely linked to the surface code of the original text, using omission-selection strategies such as the following: copying (MANDIN; LEMAIRE; DESSUS, 2007); paraphrasing, almost copying (HIRVELA; DU, 2013); and the linked combination, which involves the unstructured integration of two copied or paraphrased sentences or more from the original text. These difficulties in reading comprehension, moreover, often lead this type of reader to construct/infer ideas based on a misinterpretation of the textual content (MANDIN et al., 2007).

Mature readers, on the other hand, have no difficulty in understanding the text locally and globally, so they produce a summary closely linked to the model of the situation, generating a mental model that allows them to integrate the textual base into their previous knowledge. This model is constructed using strategies such as omission-selection, paraphrasing personally, generalization and construction (WESTBY; CULATTA; LAWRENCE; HALL-KENYON, 2010).

The generalization of the use of ICTs has meant that the level of maturity of readers may differ depending on the text format they use. In this sense, some recent studies analyze the reading comprehension using electronic devices. Thus, Martínez and Esquivel (2017) analyzed the existing differences in reading comprehension between students using

multimedia resources and those reading printed texts: it was found that those students using multimedia resources obtained higher advances than the rest of them. In addition, other authors have demonstrated that multimedia programs facilitate reading comprehension for those students with difficulties (CABERO-ALMENARA; PIÑERO; REYES, 2018).

Methodology

A set of hypotheses is raised based on the objectives described above:

- New students enrolled in the first year of the Bachelor's Degree in Primary Education at the University of Salamanca have difficulties in mastering both basic reading comprehension and written expression skills for the construction of knowledge.
- Students who access the first year of Psychopedagogy from the Bachelor's Degree in Primary Education have difficulties to adequately perform a reading test that requires basic skills in reading comprehension and written expression for the construction of knowledge.
- There are differences in the levels of basic skills in reading comprehension and written expression between newly enrolled students and those studying Psychopedagogy after finishing the Bachelor's Degree in Primary Education.
- The textual format, printed or hyperlinked, is related to different reading comprehension and written expression tasks.

In order to contrast the hypotheses, two studies are carried out. The first tries to answer the first three hypotheses, while the second focuses on the fourth. Both are framed within different designs that we will describe independently below.

Experimental design

For the first study (*Design I*) we established a transversal design with a population with students and graduates of the Bachelor's Degree in Primary Education at the University of Salamanca (academic year 2013/2014), in order to select two groups that were at different formative stages:

Primary Education Group (*PED*): students enrolled in the first year of Primary Education Studies at the University of Salamanca.

Psychopedagogy Group (*PSP*): students in the first year of Psychopedagogy after the completion of the Bachelor's Degree in Primary Education during the same academic year.

We used a pre-experimental design where pre- and post-treatment measures of the dependent variable were not taken within the same study group; but each group represented a different measure by representing two different formative moments. Thus, we considered PED as the Pre-test measure; the formative process before being PSP as the treatment or Test; and PSP as the Post-test measure.

For the second study (*Design II*) we established a transversal design, based on the samples of the previous design, in order to form four groups made up of students in a specific formative moment and who had carried out the task of summarizing.

- *Group 1. PED Text:* newly enrolled students who had completed the task by reading a printed text.
- *Group 2. PED Hypertext:* new students of the Bachelor’s Degree in Primary Education who carried out the task after reading a hyperlinked text.
- *Group 3. PSP Text:* some students of Psychopedagogy who did it after reading a printed text.
- *Group 4. PSP Hypertext:* Psychopedagogy students who completed the task after reading a hypertext.

Thus, we used a quasi-experimental methodology with multiple observations of the dependent variable in each of the study groups to replace the control. In order to do this, we took as the Pre-test measure the results in the Design I test obtained by the students who composed the sample of this second design; as Test or treatment, the stimulus of the textual format (written or hyperlinked) when summarizing; and the results obtained in carrying out this task, as a Post-test measure.

Population and sample

The difficulties found in extracting randomly a sample from the study population led us to take three incidental groups as an initial sample: two from Primary Education and one from Psychopedagogy. We had access to them during the first three weeks of the academic year 2013/2014.

As described in Table 1, the sample for Design I consisted of a total of 130 students, 96 of which participated in the tests exclusively corresponding to Design II. In other words, if we take into account that the design of study I is the Pre-test phase of Design II, once the corresponding tests have been carried out, the sample of this second design was made up of 96 students divided into four groups according to the formative moment they were, and the textual format in which they carried out the tests.

Table 1- Definitive sample for Design I and Design II

	STUDY GROUP (university degree and textual format of task)				Total students
	PSP		EDP		
Design I	41 (31,5%)		89 (68,5%)		130 (100%)
Design II	PSP Text	PSP Hipertext	EDP Text	EDP Hipertext	
	13 (13,5%)	21 (21,9%)	31 (32,3%)	31 (32,3%)	96 (100%)

Groups of students participating in the study. PED: Primary Education Group, PSP: Psychopedagogy Group. EDP: Primary Education Group, PSP: Psychopedagogy Group.
Source: Prepared by the authors.

Instruments

Table 2 shows the different instruments used to measure the variables considered in the research, as well as the study and the phases these instruments were applied. In the first study we used:

- A *questionnaire* to determine the final composition of the sample, with two clearly differentiated parts and two different objectives: (1) collection of information on demographic data, and (2) on reading habits. In the first part, the aim was to obtain both identifying information on the subjects and academic data on the sample (center of origin, university entrance qualification and enrolment in a different university degree), while the second part was made up of a set of questions regarding the reading habits of the students.

- A *test of basic comprehension and written expression* skills to analyze the dependent variable basic comprehension and written expression skills for the construction of knowledge (VD) through 4 sub-variables (see Table 2). It was composed of an adapted informative text so that the students had enough time to carry out two proposed tasks: the extraction of key ideas from each textual paragraph and the construction of a conceptual map reflecting the hierarchical relations between the fundamental ideas of the text.

In the second study, for the Pre-test phase, the instruments from the previous study were used to determine the students' basic comprehension and written expression skills, and to analyze the considered control variables. In the Post-test phase, instruments were used to test whether students were capable of use strategically their comprehension and written expression skills to perform an academic simple task: summarize a document in a printed or hyperlinked format.

In this phase in particular, the dependent variable *Specific skills of comprehension and written expression for the synthesis of information* (VDTH) was analyzed through two operative variables, using the following instruments:

- A text-hypertext summary test with which to analyze the operative dependent variable *Use of comprehension and written expression skills to perform the task* (VDTH₁); conformed by another subset of variables related to the textual stimulus presented (see Table 2). The test was composed of an academic text about the discipline of Educational Technology, a glossary with the definition of the predictably more confusing terms, and a blank sheet to perform the summary task. The academic article was adapted to be presented in printed format, reducing its length; and in hyperlinked format, establishing a main page and a set of linked nodes.

- A metacognitive test to study the operative variable *Procedures that the student considers to have followed to perform the task* (VDTH₂) in printed format and hyperlinked.

Table 2- Instruments and variables

Instruments	Study	Variable	Operating variables • Sub-variables
Questionnaire	I II (Pre-test phase)		Identification Variables (V.Control1) • VC1.1. Gender • VC1.2. Age
			Pedagogical Variables (V.Control2) • VC2.1. Center of origin • VC2.2. High school specialty (Primary) • VC2.3. University entrance qualification • VC2.4. First cycle completed (Psychopedagogy) • VC2.5. Qualification obtained in the first cycle (Psychopedagogy) • VC2.6. Enrolment in a different university degree
			Reading habits variables V.Control3) • VC3.1. Reading language • VC3.2. Reason to read the last book • VC3.3. Subject of the last book read • VC3.4. Number of books read per year • VC3.5. Reasons not to read more frequently • VC3.6. Reading in digital format
Test of basic skills in comprehension and written expression	I II (Pre-test phase)	Basic skills in comprehension and written expression for the construction of knowledge (VD)	Formation of the main idea of each paragraph (VD1)
			Difficulties in extraction of the main ideas or keys of each paragraph (VD2)
			Construction of a concept map (VD3)
			Difficulties in the construction of the concept map (VD4)
Test of summary text-hypertext	II (Post-test phase)	Specific skills in comprehension and written expression for information synthesis (VDTH)	Use of comprehension and written expression skills to perform the task (VDTH1) • VDTH1.1. Type of underlined information (Printed text) • VDTH1.2. Annotations made in the Printed text • VDTH1.3. Intertextual integration (Hypertext) • VDTH1.4. Intertextual integration (Printed text) • VDTH1.5. Drafting • VDTH1.6. Summary of text/hypertext information • VDTH1.7. Difficulties in producing the summary
Metacognitive test	II (Post-test phase)	Specific skills in comprehension and written expression for the synthesis of information (VDTH)	Procedures that the student considers to have followed to carry out the task (VDTH2) • VDTH2.1. Reading procedure (Printed text) • VDTH2.2. Writing procedure (Printed text) • VDTH2.3. Reading procedure (Hypertext) • VDTH2.4. Writing procedure (Hypertext)
			Secondary considerations
			Use of reading aid (Glossary) (VS2)
		Student opinion (VS3)	

Instruments to measure variables to be analyzed. VC: control variables, VD: dependent variables relative to the basic skills of comprehension and written expression for the construction of knowledge, VDTH: dependent variables relative to the specific skills of comprehension and written expression for the synthesis of information, VS: secondary variables.

Source: Prepared by the authors.

All the instruments were validated using the expert judgment technique, which included processes of content analysis individually by each expert, and also in groups, so that researchers could check the degree of coincidence and divergence in their evaluations, and discuss them until a high level of consensus was achieved.

Data analysis

Data analysis was carried out in two phases. Firstly, a group of experts analyzed and evaluated the content of the tasks carried out by students, first individually and then in groups, until a high degree of agreement was reached in their judgments. And secondly, different types of descriptive (contingency tables) and inferential (statistical χ^2 , t-test of mean difference, ANOVA of a factor) statistical analyses were carried out.

Results

We present the results obtained in two different sections to show them clearly.

Results obtained in Design I

To study the sub-variable *Formation of the main idea of each paragraph* (VD₁), we analyzed the ideas extracted by the students from each textual paragraph, without appreciating inter-group differences (level of significance, LS=0.05) in any of them (see Table 3). After this analysis, we added the scores obtained by each student and established their general level of performance according to the interval in which the total score obtained was situated (between very low and very high). Thus, we observed that the level of students in this sub-variable was between low and very low. The t-test for independent samples confirmed that there were no inter-group statistical differences ($t=0.174$, $p=0.862$).

The difficulties observed when forming the main ideas or keys of each paragraph are specified in Table 4, where differences can only be seen in paragraph 7. Specifically, 45.5% of Psychopedagogy students misinterpreted the information in that paragraph, while 57.8% of the Bachelor's Degree in Primary Education students did not adequately express the information extracted.

In terms of the sub-variable *Construction of a conceptual map* (VD₃), we have to point out that no student was able to reflect the structural relationships between the most important ideas of the text, and only 3.1% structured these ideas around a subordinate organizational form ($\chi^2=0.651$; $p=0.420$).

Regarding the type of *Difficulties in the construction of the conceptual map* (VD₄), it should be noted that 64.3% of the students constructed one in which the overall structure and/or meaning was not clear. Besides, 26.2%, in spite of constructing a clearly structured conceptual map, defined relationships that were not the ones established in the text. Therefore, it is not possible to speak of intergroup differences around this variable ($\chi^2=3.447$; $p=0.178$).

Table 3- Formation of the main idea of each paragraph (VD₁)

		Párrafos								
		P1	P2	P3	P4	P5	P6	P7	P8	P9
Categories	Extracts:									
	The main idea	3,8%	2,3%	15,4%	0,0%	19,2%	0,0%	19,2%	6,2%	13,8%
	The thematic idea	3,8%	3,1%	2,3%	0,8%	2,3%	0,8%	6,2%	2,3%	1,5%
	Part of the main idea	3,8%	7,7%	10,8%	3,1%	6,2%	6,9%	10,0%	11,5%	6,9%
	Part of the thematic idea	3,1%	2,3%	4,6%	0,0%	6,2%	2,3%	11,5%	0,0%	1,5%
	Has difficulties to extract the main or thematic idea	85,4%	84,6%	66,9%	96,2%	66,2%	90,0%	53,1%	80,0%	76,2%
<i>Total number of students</i>		130 (100%)	130 (100%)	130 (100%)	130 (100%)	130 (100%)	130 (100%)	130 (100%)	130 (100%)	130 (100%)
χ^2 (Primary Education and Psychopedagogy)	χ^2 (gl)	8,924 (4)	2,307 (4)	0,828 (4)	0,552 (2)	3,497 (4)	3,962 (3)	1,209 (4)	2,075 (3)	2,122 (4)
	<i>p</i>	0,063	0,680	0,654	0,759	0,478	0,266	0,877	0,557	0,713
<i>Level of difficulty for each paragraph</i>		MEDIUM	HIGH	LOW	HIGH	MEDIUM	HIGH	LOW	LOW	LOW

Source: Prepared by the authors.

Based on the results and taking into account the variables considered, we observed a quite low level of reading comprehension in general. On the one hand, the level of student performance for the sub-variable *Formation of the main idea of each paragraph* (VD₁) was between low and very low; and on the other hand, 96.9% of the sample presented difficulties with the construction of the conceptual map (Sub-variable VD₃).

We must take into account that, as Sánchez et al. (2009, 2010) pointed out; it is difficult for readers to process the text at the local and global levels simultaneously, since this would imply an important expenditure of cognitive resources. Therefore, they must be able to simplify the task of reading by properly managing their resources in order to move from a microstructural cycle to a macro-structural one. Thus, it is very useful for the reader to know and use techniques such as the extraction of key ideas or the conceptual map to note down on paper both ideas and relations as this allows to recover them when needed, without using the long-term memory.

All the abovementioned difficulties lead us to think that when students are faced with a more complex text, such as, the text/hypertext of the Post-test phase of Design II, they will have problems managing their resources in order to achieve adequate performance.

Table 4- Difficulties in forming the main ideas or keys of each paragraph (VD₂)

		Párrafos								
		P1	P2	P3	P4	P5	P6	P7	P8	P9
Sub-categories	Does not have difficulties with written expression, but extracts a secondary idea/ topic or constructs a very general idea	54,1%	36,4%	21,8%	39,2%	36,0%	9,4%	23,2%	3,8%	32,3%
	Constructs the idea based on a misinterpretation of the information in the paragraph	8,1%	16,4%	3,4%	14,4%	4,7%	41,0%	29,0%	51,9%	19,2%
	Difficulties in expressing the extracting idea	37,8%	47,3%	74,7%	46,4%	59,3%	49,6%	47,8%	44,2%	48,5%
<i>Total errors</i>		111 (100%)	110 (100%)	87 (100%)	125 (100%)	86 (100%)	117 (100%)	69 (100%)	104 (100%)	99 (100%)
χ^2 (Primary Education and Psychopedagogy)	χ^2 (gl)	1,898 (2)	4,164 (2)	0,850 (2)	4,764 (2)	1,614 (2)	1,080 (2)	6,335 (2)	4,807 (2)	1,752 (2)
	<i>p</i>	0,387	0,125	0,654	0,092	0,446	0,583	0,042	0,090	0,417
<i>Level of difficulty for each paragraph</i>		MEDIUM	HIGH	LOW	HIGH	MEDIUM	HIGH	LOW	LOW	LOW

Results obtained in Design II

Based on the data obtained in Design I for those students who also performed the Post-test phase tests, we elaborated the same analyses in the four groups that made up the sample of this second design.

The analysis of the control variables considered does not show inter-group differences ($LS=0.05$). Moreover, these differences do not occur in three of the four sub-variables analyzed to assess the *Basic skills in comprehension and written expression for knowledge construction* (VD). The students reached a general performance level between low and very low in the sub-variable Formation of the main idea of each paragraph (VD₁), showing difficulties that, taking into account the sub-variable *Difficulties in forming the main idea of each paragraph* (VD₂), indicate a scarce competence to adequately express the extracted information. It should be noted that 95.8% of the sample also presents difficulties when it comes to constructing the conceptual map.

In the same way as in Design I, the students, in this case organized in four groups, presented scarce *Basic skills in comprehension and written expression*, as can be seen from the type of performance, between low and very low, in the formation of the main idea of each paragraph (VD₁). In addition, they showed difficulties for the *Construction of a conceptual map where the macrostructure of the read text is collected* (VD₃).

We now describe the results obtained in the Post-test phase of the second design. We analyzed the dependent variable *Specific skills in comprehension and written expression for information synthesis* (VDTH) starting from two operative variables: *Use of comprehension and written expression skills to perform the task* (VDTH₁) and *Procedures that the student considers to have followed to perform the task* (VDTH₂).

As for the first variable (VDTH₁), the analyses did not show inter-group differences for most of the sub-variables considered. The sub-variables related to reading printed text indicate that 93.2% of the students did not make notes on it, and 97.7% did not collect information from the footer in the summary they wrote. It is worth mentioning, however, that a significant number of students belonging to the PSP text group highlighted some structural aspects, while those belonging to the PED group performed these tasks in a more diversified manner. On the other hand, the sub-variables related to both the reading of printed text and hyperlinked text, reflect that 94.8% of the students did not make a draft and all of them had difficulties in elaborating the summary, since 86.5% of them built a text with no clear meaning.

Only statistically significant differences appear in the sub-variable *Intertextual integration (Hypertext)* (VDTH_{1,3}), associated with the fact that 28.5% of the PSP hypertext group used the links, while none of the PED hypertext group did (=10.012; p=.007). Despite these differences, it seems clear that most students do not collect information from hyperlinks in their abstract (88.5%).

Taking all this into consideration, and situating the findings within current studies on the subject, such as those of Escoriza (2006), Meyer and Ray (2011) and Van Dijk (2006); or within other older studies (MADLER; JOHNSON, 1977; VAN DIJK; KINTSCH, 1983), we can state that students had problems when strategically using the textual superstructure in order to extract the macrostructure from the text. Thus, they follow synthesis strategies closely linked to the surface code, do not make annotations in the text, barely manage to focus on the structural aspects of the text when underlining, and do not use a draft. We suppose that the main cause of these problems is the lack of adequate training to perform this type of task. In addition to this, those who read the hypertext did not use the information from the hyperlinks in the written summary: due to the difficulties we have just pointed out, it would respond mainly to problems of understanding rather than to the use of structural criteria.

Table 5- Procedures the student claims to follow to complete the task (VDTH₂).

Sub-variables		PSP Hipertext	EDP Hipertext	PSP Text	EDP Text	Students by type of response	χ^2 (g)	p
VDTH2.1. Reading procedure (Printed text)	Reads the text twice or more times and underlines it	-	-	46,2%	45,2%	45,5%	8,303 (3)	0,04
	Reads the text once and underlines it	-	-	53,8%	19,4%	29,5%		
	Reads text without under-lining	-	-	0,0%	22,6%	15,9%		
	N/A	-	-	0,0%	12,9%	9,1%		
VDTH2.2. Writing pro-cedure (Printed text)	Performs one of the above three steps, and then rereads the summary and omits information	-	-	23,1%	6,5%	11,4%	38,235 (4)	0,00
	Summarizes from annota-tions/ drafts	-	-	15,4%	0,0%	4,5%		
	Summarizes from the underlined parts	-	-	61,5%	0,0%	18,2%		
	Makes the summary di-rectly from the text	-	-	0,0%	74,2%	52,3%		
	N/A	-	-	0,0%	19,4%	13,6%		
VDTH2.3. Reading procedure (Hypertext)	Reads hypertext twice or more times by clicking all hyperlinks	33,3%	6,4%	-	-	17,3%	13,314 (4)	0,01
	Reads the hypertext once by clicking all hyperlinks	14,3%	12,9%	-	-	13,5%		
	Reads hypertext by click-ing part of hyperlinks	23,8%	6,5%	-	-	13,5%		
	Does not read hyperlinks	28,6%	64,5%	-	-	50,0%		
	N/A	0,0%	9,7%	-	-	5,8%		
VDTH2.4. Writing pro-cedure (Hy-pertext)	Performs one of the three previous steps, and then rereads the summary and omits information	23,8%	0,0%	-	-	9,6%	13,549 (4)	0,01
	Summarizes from draft	14,3%	12,9%	-	-	13,5%		
	Copies hypertext infor-mation into a Word doc-ument, highlights infor-mation s/ he considers important, and summa-rizes	9,5%	0,0%	-	-	3,8%		
	Summarizes the text di-rectly	52,4%	77,4%	-	-	67,3%		
	N/A	0,0%	9,7%	-	-	5,8%		

Source: Prepared by the authors.

Regarding the Procedures that the student considers to have followed to perform the task (VDTH₂), Table 5 shows that there are differences among the groups in all the sub-variables considered. Although most of the students who read the printed text did so once or several times, as well as underlining it, there was 22.6% of the *PED text group* that did not perform the underlining activity. While 61.5% of the students belonging to the PSP text group summarized from what they had underlined, the majority of the *PED text group* did so directly from the document (74.2%). A significant proportion of students in the *PSP hypertext group* read the hyperlinks (71.4%), but 64.5% of those in the *PED hypertext group* did not. Finally, it should be added that, despite the existing intergroup differences, most of the students summarized directly from the hyperlinked text.

As a result, both Psychopedagogy and Primary Education students used reading comprehension procedures that can be included within the category of immature reader. However, as we have shown, there are certain differences in the used procedures when carrying out the task of summarizing the printed document.

Discussion and conclusions

The first conclusion from the results obtained is that the *formative moment in the university environment* is not a determining factor for the possession of basic skills of reading comprehension and written expression in the sample considered. The analysis of the tasks of extraction of key ideas and construction of a conceptual map indicates that both the students who began the Bachelor's Degree in Primary Education, and those who had accessed to the University Degree in Psychopedagogy (second cycle) from the Bachelor's Degree in Primary Education, showed important deficits in reading skills such as following the thematic progression of the text, strategically using the textual superstructure to process it globally and self-regulating metacomprehension.

Secondly, *textual format* is not also a determining variable for predicting a better level of performance when summarizing an academic document in writing. The students, in general, constructed *summaries* with no clear global meaning, showing deficiencies that indicated the use of synthesis strategies more linked to the surface code of the text than to the construction of the situation model. Furthermore, taking into account that most of the students did not use a draft, it was difficult for them to manage their cognitive resources properly in order to process the text globally. All this seems to indicate that the text/hypertext structure was not strategically used to extract the macro-structure. On the other hand, more specifically, we see that those who read the academic document in printed format did not use techniques such as note-taking, a strategy that would have allowed them to highlight and synthesize relevant information. Although the most used technique was the underlining, only a few of them focused on aspects related to the structure of the text. However, both the students who read the academic document in hyperlinked format and those who read it in printed format did not use the intertextual information in the summary they wrote. If we take into account that the students in general were not able to use the superstructure strategically to extract the macrostructure from the text/hypertext, we consider that the absence of intertextual information in the summaries could be due more to comprehension difficulties than to the use of structural criteria.

According to different authors (MCNAMARA et al., 2007; MEYER; RAY, 2011; SALMERÓN; GUTIÉRREZ-BRAOJOS, 2012) mature readers follow a series of procedures: goal setting, textual exploration or reading through in the before-reading stage; taking notes in the text, asking self questions and solving comprehension problems during the reading stage; and drafting in the after-reading stage. Considering all this, as well as the level of performance in the task, it seems evident that the procedures the students used to summarize were not adequate. None of them mentioned setting goals, taking notes in the text, asking oneself questions, solving comprehension problems, or drafting.

Despite this, and considering the differences found ($LS=0.05$), mainly linked to the formative moment, it is possible to affirm that, in certain aspects, the procedures used by the students of Psychopedagogy were better than those of Primary Education. The process used by the students of Psychopedagogy to summarize with the underlined information resulted more adequate than the one followed by the group of Primary Education, who carried it out directly from the reading of the text. The Psychopedagogy students read at least part of the hyperlinks, while a significant proportion of those of Primary Education did not access any of them. A good part of the Psychopedagogy sample used the glossary, while the majority of the students of Primary Education did not do so despite of the fact that they should be less familiar with the terminology. In general, the students stated that the summary task was very useful, and considered that they had no difficulties in carrying it out. This suggests that, although they knew the importance of the task, the students were not aware of the possible difficulties involved in its elaboration.

In short, it does not seem that the students who had completed the Bachelor's Degree and were studying the University Degree in Psychopedagogy had acquired, after three years of academic training, effective skills in reading comprehension and written expression. On the contrary: they showed similar difficulties to the students enrolled in the first year of the Bachelor's Degree in Primary Education when they had to face tasks such as extracting key ideas, constructing a conceptual map, or preparing a summary. With the results obtained, it is necessary for the educational community in general and educational agents with legislative capacity in particular to carry out an in-depth reflection on the measures to reduce the deficiencies of reading comprehension and written expression in university students. It is worthy to meditate whether educational policies, including universities' curricula, should be adapted to improve training in these skills. It is paradoxical that certain publications, such as the PISA reports on reading comprehension of 15-year-old students generate great interest and even controversy internationally in the educational communities, whilst it is not usual to find studies on the competence of university students who, as those enrolled in the Bachelor's Degree in Primary Education, will carry out their future work as teachers.

It is true that the results obtained at the University of Salamanca cannot be extended to other contexts due to the characteristics of the sample analyzed. However, we consider essential that, both in the initial formative stage (Bachelor's Degree in Primary Education) and in the performance of their professional work, teachers shall receive adequate training in summary writing techniques, extraction of key ideas from texts and hypertexts, as well as in the design of concept maps. To this end, we estimate as necessary, in the first place,

to develop programs for students enrolled in Bachelor's Degrees in Primary Education, so that future teachers learn to use all the abovementioned strategies. These specific training programs must be integrated in the curriculum, and shall be related to communication and technology contents, where the two textual formats considered in this research are used. Secondly, training programs for lecturers of the Bachelor's Degree in Primary Education shall be provided, so lecturers will have the means to train their students in the strategic and self-regulated use of the skills involved in written comprehension and production.

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Gabriel Herrada Valverde is a graduate in psychopedagogy and PhD by the University of Salamanca, where he collaborates with the Educational Technology Research Group. He has also been lecturer at the University of Jaén, and is currently a lecturer at the University of Almería.

Rosario Isabel Herrada Valverde is graduate in psychopedagogy and PhD by the University of Almería, where she is currently lecturer. She has been lecturer at the University of Castilla-La Mancha and at the University of Murcia. She has been research visitor at the Universidade do Algarve (Portugal).