The teaching of reading comprehension and metacomprehension strategies.
A program implemented by teaching staff

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Título: La enseñanza de estrategias de comprensión y metacomprensión lectora. Un programa implementado por el profesorado.
Resumen: En este artículo presentamos una investigación en la que se elaboró un programa de instrucción directa de estrategias de comprensión y metacomprensión lectora dirigido a segundo ciclo de primaria. Se realizaron reuniones con el profesorado de la muestra en el que se aplicó el programa, con el fin de instruirle en su aplicación. Dicha instrucción quería lograr una aplicación más natural en el aula y una conciencia para su utilización posterior. Participaron 457 alumnos de un municipio castellanoparlante de Vizcaya escolarizados en castellano y en euskera. Los resultados avalan la hipótesis de una mejora significativa de la comprensión lectora en ambas lenguas y muestran la minimización del efecto de algunas variables actitudinales. La evaluación posterior realizada por los protagonistas mostró que su motivación y la implementación del programa fueron satisfactorias.
Palabras clave: Comprensión lectora; instrucción directa; entrenamiento profesorado; estrategias comprensión; estrategias metacomprensión.

Abstract: This paper presents a piece of research in which a program for the direct teaching of reading comprehension and metacomprehension strategies addressed to a sample of Second Cycle Primary Education students was drawn up. A series of meetings were held with the teachers of the target sample students in order to train them on how to apply the program. This training had the purpose of making the program application in the classroom more natural and of providing further awareness for its practice in the future. It was 457 pupils of a Spanish speaking town of Vizcaya enrolled in school in Spanish and Euskera. The results support the hypothesis that a significant improvement of reading comprehension in both languages is achieved through the program, and that the effect of some attitudinal variables is minimised. The evaluation carried out by the participants showed that their motivation and the program's implementation were satisfactory.
Key words: Reading comprehension; direct instruction; teacher training; comprehension strategies; metacomprehension strategies.

Introduction: The difficulties of text comprehension in the classroom

This piece of work was conceived as a response to the social and educational concern arisen by the results obtained in reading comprehension surveys. These results reveal a deficient level of reading comprehension skills among pupils (Castillo & López, 1996; OCDE, 2002, 2007), and a lack of activities oriented at improving text comprehension in the classroom (Solé, 1987a; Hare & Bingham, 1990; San José & Vidal-Abarca, 1994; De Miguel, 1999). On the same lines, Cuetos (1996) suggests that the poor comprehension skills are a consequence of the lack of activities for improving text comprehension in the classroom, as the main purpose of reading at school is that the pupils are skilled to read words, rather than to understand the texts.

An approach supported by Cognitive Psychology (Gardner, 1987) states that reading is not only deciphering a sign code, but also understanding the information conveyed by the text and integrating this information with the reader's previous knowledge. (García Madruga, *et al.*1999; Elosúa, 2000; García Madruga, Gómez & Carriedo, 2002; Graesser, Gernsbacher & Goldman, 2000; León, 2004; Rosas, Jiménez & Rivera, 2003). Thus, reading involves processes at different levels, from recognition of graphemes to the integration of global ideas from the text into the reader's knowledge. In this sense, Adams (1980) identifies three levels of processing

that intervene in reading: word recognition, syntactic processing and semantic processing.

Different explanatory models of the reading process have been developed on the basis of these theses (Perfetti, 1985; Ruddell, Ruddell & Singer, 1994; Marín, 1994; Cuetos, 1996). The existing models differ in explaining how these processes relate functionally with each other; essentially they differ in acknowledging or not the need to complete one of the processes in order to pass the information on to the next one. According to Gonzalez (1993) these differences have given rise to three types of models: bottom-up processing (Roelofs, 1997) top-down processing (Johnson, 1975) and the interactive model, which is more widely accepted nowadays. The latter advocate a parallel distributed processing, where top-down and bottom-up information happens at the same time (Cuetos, 1996), the processing is then both interacting and compensating at the same time (Stanovich, 1993; Brunsdon, Coltheart & Nickels, 2006).

Like García Madruga, Martín & Luque (1997) suggest teaching of reading comprehension should consist of two stages: the first one should focus on learning and mastering the basic abilities of word understanding; the second one, which has to do with strategy and metacognitive control, should focus on the construction and integration of the text's significance in the reader's memory (Barrero, 1994; Ugartetxea, 1996; Hacker, 1997)

Comprehension strategies embrace all actions of information processing during reading. Sánchez (1993a) classifies these actions in four groups: a) strategies to operate with thematic progression (Van Dijk & Kintsch, 1983), b) strategies of global construction of meaning or textual macrostructure construction (León, 1991), c) structural strategies or strategies to operate with the text's superstructure (Koba-

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yaski, 2002), d) strategies to access previous knowledge or to build the reader's text model (Otero, 1998; Willis, 2008).

Moreover, readers need to put in operation another set of metacognitive strategies in order to increase awareness of their own knowledge processes and their ability to control such processes according to the reading objectives (Rios, 1991). This implies planning the cognitive activities, controlling the process and assessing the results (Brown, 1987).

The search for educational solutions to improve reading comprehension is based on the studies stating that readers with comprehension problems can benefit from being taught the comprehension and metacomprehension strategies used by competent readers. In this sense, Sanchez (1993a) considers that the main aim of such teaching should be to help pupils transform their poor immature reading comprehension strategies into the strategies used by competent readers. From this premise and with the aim of defining which strategies should be taught, the operating differences during the textual process have been analysed, and subjects with a comprehension deficit have been compared to good readers (Oakhill, Yuill & Parkin, 1986; Sánchez, 1988, 1993a,b; Kletzien, 1991; Montanero & Blazquez, 2001; Fernández, Machuca & Lorite, 2002; Montanero, 2002; Montanero, Blazquez & León, 2002). The results obtained allow conclude that the main difference in the way of operating of these two groups is that good readers devote more time to the active construction of the text significance. The strategies used are the ones classified by González & Marcilla (1996. p. 67) into two big groups: processing or comprehension strategies and metacognitive or metacomprehension strategies. Their use enables the correct construction of the different text structures, the efficient use of previous knowledge and the control and supervision of the whole process of comprehension.

Based on the belief that immature readers can improve their comprehension by being taught the strategies that competent readers use spontaneously, different intervention programs have been designed. The authors suggest two methodologies: direct teaching, as a response to the demand by teaching staff of precise material to work on reading comprehension, and a more general instruction applied to daily teaching. The latter implies a bigger effort from the teaching staff, but responds to the appreciation that applying a precise program may lack context and significance.

The empirical verification of the differences in text processing has given place to the development of many programs of intervention (Meyer, 1984; August, Flavell & Clift, 1985; De Miguel, 1999; Pascual & Goikoetxea, 2003; Echevarría, 2006).The objective was, therefore, to teach the comprehension and metacomprehension strategies involved in the effective development of comprehensive reading. Based on the classroom instruction in reading put forward by Rosenenshine & Stevens (1984), a number of programs have appeared labelled as "direct instruction". These are characterised by highlighting the need to teach the reading comprehension strategies explicitly and systematically, monitoring

the pupils' answers and enabling feedback. But a review of the design and application of these programs indicates that most of them have some of the following limitations:

First, regarding the objectives and contents of the instruction, most programs only teach in one or more strategies, and they very seldom combine the comprehension and metacomprehension strategies. It is important to remember that the work with isolated skills or strategies is often criticised in the instruction of reading comprehension (Solé, 1992).

Second, regarding their application, programs are frequently applied by professionals who do not work in the classroom, or who do not even work at a school, which makes it impossible to create an ecologically valid environment. The ecology of the instruction is one of the main factors to determine the success or failure of educational interventions (Hansen & Pearson, 1983; Baumann, 1985; Carriedo & Alonso, 1994; Mata, 2003). In reverse, when the teacher implements the program in the classroom, the limitations are usually found in the lack of knowledge on the theory and on the procedure (Hansen & Pearson, 1983; Espín, 1987; Mata, 2003).

Third, we haven't found a single program in Euskera.

In short, these reflections show the need to make a program for the direct instruction of reading comprehension and metacomprehension strategies, which is drawn up in Spanish and Euskera, the two official languages of the Basque Autonomous Community (BAC), and which is designed for its application in the classroom by the previously trained teaching staff. The knowledge and experience acquired through applying this program would also enable teaching staff to include this type of strategy in their classroom's daily routine. This research tries to answer to these needs.

Method

Previous stage to the educational intervention: Working out the program

In the pre-intervention stage a program of direct instruction of reading comprehension addressed to 2nd cycle primary education students was drawn up, seeking to improve the limitations previously identified. The general objective was, therefore, to teach the comprehension and metacomprehension strategies involved in the effective development of comprehensive reading. The program was designed in Spanish and Euskera.

The program was based in the direct instruction suggested by Baumann (1983, 1985, 1990), characterised by gradually moving the learning responsibility from the teacher to the pupil. This gradual change is possible by following five steps in each didactic unit:

1. Introduction: The teacher explains the purpose of the activity to the pupils and the reason why acquiring this ability will help them read better.

2. Example: Then the teacher explains with an example how this ability of understanding the relationship between texts is going to help them understand better what they're reading.

3. Direct instruction: The teacher explains, describes and shows the ability to be taught.

4. Application steered by the teacher: The teacher starts the task, orientates and corrects the students, and makes the students put the ability into practice.

5. Individual practice: The students, through practical exercises, have to use the ability individually.

The program consisted of six didactic units elaborated with narrative and explanative texts, ranked by their level of difficulty as suitable for children between 8 and 11 years of age.

Didactic units 1, 2, 3, 4: The strategies of thematic progression and the ones addressed to the construction of the text macrostructure are dealt with, with the following objectives:

- To acknowledge the connecting theme between the text ideas.
- To extract every aspect that refers to this theme (comments).

- To differentiate the text's "main idea", from the "details".
- To select the text's main ideas, evaluating every idea in relationship to the rest.

Didactic unit 5: The structural strategy is dealt with, with the following objectives:

- To acknowledge the rhetoric organisation (superstructure) of the tales or stories.
- To code the information within the corresponding superstructure to the text object of study.
- To use the same organisational pattern as general plan to recover the information.

Didactic unit 6: The strategies of metacomprehension and those oriented to the construction of the text model are dealt with, with the following objectives:

- To formulate and verify hypotheses before, during and after reading.
- To establish relationships between the information given by the text and the reader's previous knowledge.
- To plan, supervise and assess the own comprehension.

As an example, Didactic Unit 1 is reproduced here:

DIDACTIC UNIT 1

1. Objectives.
  - To appreciate that telling the main idea from the details will help them better understand texts.
  - To obtain the main idea from a list of words.
  - To make a list of words from the main idea.

2. Duration
  - A session of approximately 60 minutes

3. Activity Development
  - Introduction: In the stories that we read in class there are big and small ideas. Big ideas are the important information, this is why we call them main ideas, and small ideas are the story details. Not is that details aren't important, but we must be able to tell details from main ideas. Today we are going to learn how to tell ones from the others by using word lists. This will help you understand better the stories that we read in the classroom.
  - Example: I'm going to give you an example: we'll try to find out which is the main idea in this list of words. Then you write on the board:

> Shirt
> Shoes
> Trousers
> Skirt
> Hat
> Socks
> Clothes

We have the words: shirt, shoes, trousers, skirt, hat, socks and clothes on the board. Clothes is the main idea in this list of words, as all the other words are pieces of clothes.

  - Direct instruction: In this case the words in the list (shirt, shoes, trousers, skirt, hat, socks) are the details and "clothes" is the main idea. The main idea is a word that includes all the list, a word that talks about all the rest.
  - Exercise steered by the teacher: Activity 1 is handed out: we have the words: apple, orange, tangerine, pear and peach written under the tree. The exercise consists of writing the main idea of this list of words inside the tree. In order to find the main idea we have to look

for a word that speaks about all of them. Does anyone have any ideas? 'Fruit' is accepted. Good, fruit is the main idea because all the words under the tree are fruits.

- Individual practice: now you're going to do on your own an exercise like the one we have just done. Write your name on the sheet. Hand out activity 2 and 3 (1)

4. Material
- Activities 1, 2 and 3.
- Board and markers.
- Pencils for the pupils.
(1) Another two activities have been designed: Activity 2 consists in guessing what the main idea is from three different word groups (colours, nouns and rooms); activity 3 consists in finding words that belong to three given main ideas (parts of the body, names of games and TV programmes)

Once the program designed and before the intervention, it was evaluated. Three experts were interviewed individually (the person in charge of primary education in a Centre for Pedagogic Resources, and two primary education teachers with more than 10 years experience in teaching and alien to the experience) and the 13 teachers participating in the program.

The theoretical basis, objectives, activities, texts and methodology were positively assessed by the experts. The participating teachers expressed difficulties in understanding the theoretical basis and a certain resistance, as they thought it was irrelevant for applying the program. Their opinions reinforced our perception of the need to train the teaching staff in reading comprehension and metacomprehension strategies.

Stages of the educational intervention: Previous training of the teaching staff and program application.

Intervention was designed in two clearly different stages: The previous training of the teaching staff and the program application.

Training of the teaching staff

Many authors (Hansen & Pearson, 1983, Espin, 1987; Baumann, 1990; Carriedo & Alonso, 1994, Mata, 2003) express the importance of training the teaching staff in the comprehensive reading and the need that their training enables them to use comprehensive reading strategies in the classroom.

Thus, the teaching staff was trained in order to provide the necessary theoretical and methodological skills for a more efficient application of the direct instruction program. With this aim, three 60-minute meetings were programmed for the 13 teachers of the seven schools involved in the program. The teachers were trained in:
- The need of teaching to understand.
- Strategies implied in the effective development of reading comprehension.
- Theoretical and practical grounds of direct instruction.
- Guided reading of the direct instruction program.

- The working material was the program itself, together with a basic bibliography about instruction in comprehension and metacomprehension strategies.

Applying the program in the classroom

An education intervention was then designed and put into practice in seven schools in Santurtzi (Spain) to assess the effectiveness of the program in improving the students' strategies of comprehensive reading. The assessment also took account the different ways students had responding to the instruction according to their personal characteristics (subject variables) and to context (context variables)(see Table 1).

Table 1: Variables of the pupils.

Subject variables	Intelligence level
	Level of vocabulary in Spanish
	Attitudes
Context variables	Parent´s level of education
	Family´s attitude towards reading
	Family´s attitude towards language
	Language of instruction
	School

With the aim of analysing the influence of the variables of the pupils following the reading comprehension program in Spanish and Euskera, before starting the educational intervention the following variables were assessed: intelligence, vocabulary level in Spanish, pupil's attitude towards reading, family's attitude towards reading and towards language, parents' level of education, reading comprehension in Spanish and Euskera.

Once the intervention finished, a second assessment of reading comprehension was carried out, and the questionnaires about the teachers and students' opinion about the program were collected.

The obtained data were introduced in the program SPSS/PC+ for their statistical processing.

Participants

The phase of intervention was carried out in 7 schools of the Spanish speaking town of Santurce (Vizcaya). Partici-

pants were 457 pupils distributed in 25 classrooms in their 3rd and 4th years of Primary education (aged 8 to 10). 236 of these pupils were taught in Spanish except Euskera language (Spanish teaching groups), and 221 of them whose teaching is totally except Spanish language or partially in Euskera (Euskera teaching groups).

Instruments

The following standard tests were used for the data collection phase:
- Raven's Test of Progressive Matrices. SPM intelligence test (2001).
- De la Cruz's ECL 1 and 2 Tests (1999) for the evaluation of reading comprehension.
- De la Cruz's ECL 1Test. (1999) Irakurriaren Ulermenaren Ebaluaketa Euskera version of the test mentioned before.
- Reading Attitudes Scale. Inspired in Campbell's inventory of reading attitudes (1966) presented by Espín (1987).
- EVOCA Test (Battery 1) by Suárez, Seisdedos & Meara (1998) for the evaluation of the level of vocabulary in Spanish.

On top of the above tests, 4 questionnaires were drawn up:
- Questionnaire 1: Aiming at evaluating the pupil's perception of the degree of reading and language use within the family unit.
- Questionnaire 2. Aiming at recording the level of education achieved by the parents.
- Questionnaire 3. Designed with the aim of registering the teachers' opinions about the adequacy of the different aspects of the program.
- Questionnaire 4. Its aim is to collect the pupils' appraisal of the program.

Design and Procedure

The pupils in the sample were distributed in four groups: experimental A, experimental B, control A and control B.

Group experimental A was composed of 118 pupils belonging to the Spanish teaching group, the Spanish version of program was used with them. Group experimental B was composed of 115 pupils belonging to the Euskera teaching group and the Euskera version of the program was used with them.

The program application took place as follows: once trained, the teachers devoted 1 weekly hour during 8 weeks to the direct instruction of reading comprehension and metacomprehension strategies by carrying out the 6 didactic units included in our program.

Group control A, composed of 117 pupils belonging to the Spanish teaching group, and group control B, composed of 107 pupils belonging to the Euskera teaching group, carried on with their traditional instruction.

Table 2: Distribution of the sample.

Group	Experimental A	Experimental B	Control A	Control B	Total
3rd Primary	90	47	23	76	236
4th Primary	28	68	94	31	221
Summary	118	115	117	107	457

Once the program application finished, the participants (teachers and pupils) were asked to assess the relevance of different aspects of the program (theoretical basis, level of participation, didactic objectives, methodology, activities and texts) and the relevance of the program as a whole.

Results

Considerations prior to the data analysis

With the aim of assessing the improvement of the reading comprehension level in the different groups we used the test "T for related samples". This test was not carried out by all the members in the sample to ensure that results are not contaminated by factors alien to the intervention. Thus, for assessing the program's efficiency in the Spanish version, we chose the subjects who used Spanish as language of instruction and met the following conditions:

- Their score in the previous reading comprehension test in Spanish was lower than the 75th percentile, as the pupils with a higher percentile could not improve very much.
- Their score in the previous reading comprehension test in Spanish was higher than the 25th percentile, as a lower percentile could indicate difficulties in the reading microprocesses and these pupils could be influenced by the effect of the regression to the mean.
- Their score in the IQ test was higher than Degree IV (intelligence level well below the average) and lower than Degree II+ (intelligence level well above the average), as intelligence plays an important role in the reading comprehension (August *et al.*, 1985; Jiménez, 1988; Álvaro, Bueno, Calleja, Cerdán, Echevarría, García *et al.*, 1990) and therefore, most surveys control its effects.

Likewise, the program's efficiency in the Euskera version was assessed with the subjects who used Euskera as language of instruction and met the following conditions:

- Their Euskera reading comprehension test score did not surpass the 75th percentile for the reasons mentioned above.
- Their Euskera reading comprehension test score wasn't under the 25th percentile for the reasons mentioned above.
- Their score in the non verbal intelligence test was over Degree IV and under Degree II+, based on the reasons mentioned above.

Sample groups assessment prior to the intervention

Intelligence level

It was verified that the four groups (experimental and control) had a symmetrical distribution and normal levels of intelligence (see Table 3).

Table 3: Descriptive statistics of the intelligence level.

	N	MEAN	MEDIAN	MODE	S.D.	ASYMMETRY	KURTOSIS
GROUP EXP. A	117	2.8632	3.0000	3.00	0.9369	-0.234	2.395
GROUP EXP. B	114	2.9649	3.0000	3.00	0.8407	-1.116	2.918
GROUP CONTROL A	114	2.7895	3.0000	3.00	1.2082	-0.229	0.931
GROUP CONTROL B	106	3.0566	3.0000	3.00	0.9545	0.354	2.488

Level of vocabulary

It was verified that groups experimental A and control A had an almost symmetrical distribution and a normal vocabulary level. Groups experimental B and control B were not strictly distributed according to the normal curve, as the

mean and the median had central values, but the mode was not the same. Besides, the kurtosis in all groups indicated that values tended to accumulate in the extremes. In conclusion, the four groups are not equivalent in their level of Spanish vocabulary, which we think is due to the fact that they belong to different linguistic model (see Table 4).

Table 4: Descriptive statistics of the level of vocabulary.

	N	MEAN	MEDIAN	MODE	S.D.	ASYMMETRY	KURTOSIS
GROUP EXP. A	115	2.1130	2.0000	2.00	0.6723	-0.136	-0.767
GROUP EXP. B	109	2.0642	2.0000	3.00	0.8419	-0.123	-1.583
GROUP CONTROL A	115	2.0783	2.0000	2.00	0.7740	-0.136	-1.311
GROUP CONTROL B	103	1.7961	2.0000	1.00	0.7841	0.378	-1.274

Reading comprehension in Spanish

The two experimental groups were distributed almost symmetrically according to the normality rule, but the two control groups had a tendency towards positive asymmetry. Kurtosis in all groups indicated a tendency to accumulate in extreme values (Table 5).

As a consequence, there is a difference in the initial reading comprehension in Spanish. For this reason, although the differences did not appear significant after comparing the means, they were taken into account in the ANCOVA analysis by considering the reading comprehension in Spanish pre-test results as co-variant (see Table 5).

Table 5: Descriptive statistics of the Reading comprehension in Spanish.

	N	MEAN	MEDIAN	MODE	S.D.	ASYMMETRY	KURTOSIS
GROUP EXP. A	117	49.55	50.00	50	28.49	0.222	-1.236
GROUP EXP. B	110	48.97	50.00	50	29.49	0.248	-1.275
GROUP CONTROL A	111	41.86	40.00	35	25.61	0.324	-0.895
GROUP CONTROL B	106	44.08	35.00	35	27.90	0.505	-0.893

Reading comprehension in Euskera

The results obtained by the experimental group were almost symmetrically distributed, although they did not strictly conform to the normality curve. The distribution of the control group slightly tended to a positive asymmetry. Kurtosis in both groups indicated that the results tended to accumulate in extreme values.

These results hinted significant differences in the initial reading comprehension in Euskera between the experimental group and the control group. The significant differences between the two groups were confirmed and were taken into account in later analysis (see Table 6).

Attitudes

A very high percentage of subjects with very positive scores both, in the variable of the pupil's attitude towards reading, and in the family's attitude towards reading were obtained. Nevertheless, we took into account the error caused by the "desirability effect" which is usually attributed to this type of scales and treated these data with reservations.

Table 6: Descriptive statistics of the Reading comprehension in Euskera

	N	MEAN	MEDIAN	MODE	S.D.	ASYMM.	KURTOSIS
GROUP EXP. B	110	53.00	55.00	60	26.00	0.105	-0.962
GROUP CONTROL B	107	39.95	40.00	10	27.41	0.385	-0.963

Sample group analysis after the intervention

Reading comprehension level in Spanish.

The results show that both groups, experimental A and control A, have improved their average reading comprehension level in Spanish, but only the group experimental A has significantly improved (t =-3.287, p (bilat.) = .002; M= -11.94; S.D. = 26.45).

The degree of improvement of subjects not participating in this analysis was also assessed, and results showed a tendency to regression: those not reaching percentile 25 improved significantly and those over percentile 75 worsened significantly.

Reading comprehension level in Euskera

Regarding the reading comprehension level in Euskera, group experimental B have improved their results significantly unlike group control B (t= -2.247, p(bilat.) = .028; M= -8.43; S.D. = 31.18).

Like in the case of reading comprehension level in Spanish scores of subjects not selected for this analysis had a clear tendency to regression.

Multivariable analysis

In order to verify the influence of personal variables and of the context in the improvement of the pupils' reading comprehension level, an analysis of covariance (ANCOVA) with each of these factors was carried out in the reading comprehension post-test with the experimental groups in Euskera and Spanish. Their pre-tests were considered as a co-variable also. An ANCOVA analysis was used as we anticipated that the pre-test differences were significant between the groups according to the different factors analysed.

Subject variables

a) *Influence in the improvement of reading comprehension in Spanish.-* The influence of intelligence, vocabulary level in Spanish and the pupil's attitude towards reading in the improvement of reading comprehension in Spanish of the experimental groups was assessed, and the following results were obtained:
- The covariant 'reading comprehension in Spanish pre-test scores' presents a significance of p= .000, which indicates that the model used is adequate and, therefore, controlling pre-test scores adds relevant information on the pupils' performance according to the three analysed variables.

- In the experimental groups the level of vocabulary in Spanish is a significant factor in the Spanish reading comprehension post-test scores (F(2,224) = 5.846, p=.003) but this is not the case in control groups (F(2,218) = 2.632, p= .074).
- In the control groups the pupil's attitude towards reading is a significant factor in the Spanish reading comprehension test scores (F(1,215) = 4.121, p= .044) while it isn't in the experimental groups (F(1,227) = 1.975, p = .161).
- We understand that intelligence does not influence the improvement of reading comprehension in Spanish of either groups, as the pre test co-variable 'reading comprehension in Spanish' has been included. In other words, the effect of intelligence is reflected in the initial scores of reading comprehension in Spanish.

b) *Influence in the improvement of reading comprehension in Euskera.-* The influence of intelligence, vocabulary level in Euskera and the pupil's attitude towards reading in the improvement of reading comprehension in Euskera of the experimental groups was assessed, and the following results were obtained:
- The covariant 'reading comprehension in Euskera pre-test scores' is significant in all analysis (p= .000 and p= .001), which indicates that the model used is adequate.
- The pupil's attitude towards reading is a significant factor in the Euskera reading comprehension test scores in group experimental B (F(1,110) = 9.242, p= .003) while it is not significant in group control B (F(1,107) = 0.65, p = .422).
- Both in the experimental group (F(6,110) = 3.22, p= .006) and in the control group (F(7,107) = 2.234, p = .038) intelligence proves to be a significant factor in the improvement of the scores in reading comprehension in Euskera.

This variable proves very important in this case as, even though it has been controlled previously, it still has an effect.

Context variables

a) *Influence in the improvement of reading comprehension in Spanish.-* The possible influence of the factors: school, parents' level of education, family's attitude towards reading and language of instruction of experimental groups in the improvement of reading comprehension in Spanish were established. The language of instruction other than the usual was included when the results showed a significant improvement of group experimental A, and not of group experimental B in order to corroborate this result. The results indicate:
- With regard to the parents' level of education, we cannot talk about concluding data as only 54.5% of the total cases

were registered, but the results lead us to assert that the parents'level of education is an influential factor in the improvement of reading comprehension in Spanish in the experimental groups ($F(2,134) = 4.429$, p= .014) while it is not the case in the control groups ($F(2,115) = 0.833$, p=.438).
- The school is a significant factor in the increase of reading comprehension scores in Spanish in the control groups ($F(6,217) = 3.422$, p= .003) but not in the experimental groups ($F(6,227) = 1.663$, p= .132).
- Regarding the family's attitude towards reading, we need to point out that this has not been a significant factor for the improvement of the scores of reading comprehension tests in Spanish for the experimental groups ($F(1,233)= 2.419$, p= .121) while it has been significant for the control groups ($F(1,218) = 9.193$, p = .003).
- The language of instruction shows to be a significant factor in the improvement of reading comprehension in Spanish post-test scores of experimental groups ($F(1,227) = 4.02$, p= .046) which confirms the results above.

b) *Influence in the improvement of reading comprehension in Euskera.-* The results indicate:
- The parents' level of education does not appear as a significant factor for the experimental group B ($F (2,110) = 2.227$, p= .138), but the family language does present this effect $F(1,110) = 4.376$, p= .039)
- The school and the linguistic model are not significant factors in the improvement of the reading comprehension test scores in Euskera for any of the groups.
- Finally, the family's attitude towards reading appears to be a significant factor in group control B ($F(1,107) = 4.962$, p= .028) but not in group experimental B ($F(1, 110) = 2.786$, p = .098).

Evaluation of the program development

This evaluation was done at the end of the program application with the objective of assessing the relevance of the program's different aspects and assessing the teachers' and pupils' opinions about the process.

The questionnaire was filled in by the 114 pupils who had followed the program in Spanish and by the 76 pupils who had followed the program in Euskera.

The general conclusions reached from these questionnaires are the following:
- The motivation towards the program activities has been very good, although the pupils who followed the program in Spanish express a better opinion about them (87.71%) than those who followed the program in Euskera (65.52%).
- Most of the pupils perceived that following the program helped them improve the comprehension of texts (81.57% in Spanish and 59.21% in Euskera).
- Most of the pupils showed interest in continuing with this type of activity.

- Most of the pupils enjoyed teamwork better than individual work.
- There was no consensus on the activities they liked best or worst.
- The personal interview based on a questionnaire was done to 6 Spanish teachers and to 7 Euskera teachers.

The following general conclusions can be inferred:
- Teachers considered that the received instruction helped them understand the theoretical foundations but suggested that less specialised vocabulary and more examples would help them better.
- All teachers stated they were very comfortable with the methodology used.
- Teachers also valued positively the pupils' motivation, although some of them coincided in that unit 6 (metacognitive strategies) was the less motivating, probably for the pupils' difficulty in reflecting on their own understanding.
- Regarding the timing of the units, there was general agreement in considering it was adequate, except for units 1 and 3, which could have perfectly been completed in 45 minutes each, instead of one hour, as programmed.
- There was no consensus about the difficulty of texts and activities in Spanish, although some teachers asserted that for units 1, 2, 3 and 4 an individual practical activity was enough.
- Finally, the opinion feedback was very well thought of from both, teachers and pupils.

Discussion

The results obtained prove the effectiveness of our direct instruction program of reading comprehension and metacomprehension strategies in both its versions, Euskera and Spanish. Indeed, pupils in the experimental groups significantly improved their reading comprehension level in the language in which the instruction was carried out. The results in turn, also seem to support the thesis that the type of instruction developed at schools does not improve the level of the pupils' reading comprehension (Durkin, 1979; Solé, 1987b; Hare & Bingham, 1984) since the pupils who carried on with the traditional instruction did not improve significantly their reading comprehension in any of the two tests.

Another result which is not proven enough and will need more specific research is the possible homogenising role of the program in the pupils' attitudes. Indeed, analysis carried out indicate that attitudinal variables are significant in the improvement of reading comprehension in Spanish in the control group, but not in the experimental group, which should not happen unless some special condition has homogenised this factor. If the program itself proved to be the cause, then we could establish another good effect from its application, which would be an increased interest in reading. If we refer to reading comprehension in Euskera, the possible homogenising effect seems to be less likely. Although the family's attitude towards reading proves to be insignificant in

group experimental B, the pupils' attitude towards reading in this group is still significant. This result makes sense if we look at the linguistic characteristics of the context in which our research is taking place: we are in a Spanish speaking context where Euskera is in a clear position of inferiority. In such a situation the attitude and motivation factors have a big influence on the pupils' performance in the minority language once the competence factors are homogenised (Madariaga, 1994 a,b). Therefore, we think that in reading comprehension in Euskera, the effect of the pupils' attitude towards reading in group experimental B is so strong that the program has not been able to neutralise it. Nevertheless, this is only a hypothesis which needs to be more thoroughly reviewed in future research.

The direct instruction program seems to have some shortcomings too:

The first one would be the importance that the pupils' vocabulary level seems to have in their progress both, in Spanish and Euskera. We have observed from the results that the vocabulary level in Spanish and the parents' level of education, which are highly correlated (Wells, 1988; Jiménez, 1988; Álvaro *et al.*, 1990; Bel *et al.*, 1993; Domínguez, 1996), are significant factors in the pupils' progress in the Spanish version. In fact, subjects with a low level of vocabulary in Spanish (who did not reach the 25th percentile in the EVOCA test) could not improve their scores in reading comprehension in Spanish after teaching them in this program. Likewise, the presence of Euskera in the family unit is significantly correlated to the pupils' level of vocabulary in Euskera (Etxeberria, 1986; Sierra & Olaziregi, 1989, 1990; Olaziregi & Sierra, 1993) and is a significant factor for progressing in the Euskera version of the program. This indicates that the significance of the factor level of vocabulary in Euskera is moving in the same direction as in Spanish.

Therefore, when pupils have a low level of vocabulary, it is not recommended to apply the reading comprehension instruction program or, as Baumann (1985) points out, instruction in the program relevant vocabulary would be needed prior to its application.

The differences between the pupils' motivation towards the program should be mentioned in two senses: regarding the different strategies applied and regarding the language used.

Thus, in evaluating the program, most of the teaching staff coincided in pointing out didactic unit 6 (metacognitive strategies and construction of the text model) as the less mo-

tivating for the pupils. This opinion was shared with the students, as they found the activities in this unit were more difficult and less attractive. According to the teachers, the cause for this appreciation did not lie in the didactic unit design but in the difficulties of pupils in pondering about their own comprehension. This feedback makes metacognitive strategies in the classroom even more relevant.

The difference in the pupils' motivation was also remarkable according to the language of the program used. Pupils using the Spanish version of the program showed a more positive attitude towards it than the ones who used it in Euskera. A possible explanation of these differences could be the limitation in the knowledge of Euskera of pupils which didn't allow them to understand easily the texts in the program. This explanation is more likely if we remember the apparent importance of the vocabulary level in succeeding with the program and the fact that this study is carried out in a Spanish speaking environment.

Finally, another limitation detected was that most of the teaching staff participating in the training sessions showed difficulties in following the theoretical basis of our program. The training phase was, therefore, very enriching for all of them. After the training period they all admitted to feel a lot more prepared to work on reading comprehension in the classroom. This circumstance could have also helped their pupils improve their reading comprehension, reinforcing thus the hypothesis that suggests that the most important improvements in education correspond to the teachers' improved skills (Hansen & Pearson, 1983; Carriedo & Alonso, 1994; Mata, 2003). Therefore, the use of this type of programs, apart from improving the pupils' reading comprehension skills, could also increase the teachers' awareness of their instruction, as their knowledge on the subject is improved. This awareness could also foster a way of approaching texts of any curricular area in the classroom; in other words, teaching the strategy during spontaneous activity. As Sánchez (1993b) points out this would be the most effective way of introducing comprehension and metacomprehension strategies in the school curriculum.

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