

# ENHANCING COMPREHENSION IN LOW ACHIEVING 9<sup>TH</sup> GRADERS: A QUASI-EXPERIMENT STUDY

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**Abstract.** This article describes the application of a Comprehension Strategies Programme (CSP) designed to improve the reading comprehension of students with learning difficulties. The programme was implemented with 102 ninth grade students from Portuguese public schools with low achievement on a particular subject: Portuguese. An evaluation was done on the effects of the programme on reading comprehension and on school achievement. The Experimental Group presented significant improvements when compared to the Control Group (n=108) on the dimensions considered. This indicates that the CSP can bring benefits to low achieving students who have Portuguese as a mother tongue.

**Key Words:** low achievement, ninth grade students, reading comprehension

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**Chinese**

[Translation Shek Kam Tse]

葡萄牙九年级低成绩学生理解策略计划 (CSP) : 一项准实验研究

**摘要:** 本论文描述旨在提高有学习困难学生阅读理解的理解策略计划(CSP)的应用。参与研究的是 102 名葡萄牙公立学校中在特定的科目 – 葡萄牙语中成绩较低的九年级学生。研究对该计划在阅读理解和学校成绩中的作用做了评估。实验组比控制组(n=108)在考虑的各个方面中表现出明显的理解提高, 这显示出CSP可以为以葡萄牙语为母语的低成绩学生带来好处。

**关键词:** 低成绩, 九年级学生, 阅读理解

**Dutch**

[Translation Tanja Janssen]

TITEL. Een programma voor leesstrategieën voor zwakke presteerders (grade 9) in het Portugees. Een quasi-experimenteel onderzoek.

SAMENVATTING. In dit artikel wordt het gebruik beschreven van een Comprehension Strategies Programme (CSP), die ontwikkeld is om het begrijpend lezen van leerlingen met leerproblemen te verbeteren. Het programma werd uitgevoerd met 102 leerlingen (grade 9) van Portugese openbare scholen die zwak presteerden bij één bepaald schoolvak: Portugees. De effecten van het programma op tekstbegrip en schoolprestaties werden geëvalueerd. De experimentele groep liet significante vooruitgang zien in vergelijking tot de controle groep (n = 108) op de afhankelijke variabelen. Dit geeft aan dat het CSP een positief effect kan hebben bij zwakke presteerders die Portugees als moedertaal hebben.

TREFWOORDEN: zwakke prestaties, leerlingen uit grade 9, tekstbegrip.

**Finnish**

[Translation Katri Sarmavuori]

TITTELI. YMMÄRTÄMISSTRATEGIOIDEN OHJELMA (YSO) PORTUGALISSA HEIKON SUORITUSTASON YHDEKSÄSLUOKKALAISILLA OPPILAILLA: QUASI-KOKEELLINEN TUTKIMUS

ABSTRAKTI. Tämä artikkeli kuvaa *Ymmärtämisstrategioiden ohjelman* (YSO) käyttöä oppimisvaikeuksista kärsivien oppilaiden lukemisen ymmärtämisen edistämiseksi. Ohjelma tehtiin 102:lle yhdeksäsluokkalaiselle, joilla oli alhainen suoritustaso tietyssä aineessa eli portugalissa, portugalilaisessa peruskoulussa. Ohjelman tehokkuutta arvioitiin lukemisen ymmärtämisen ja koulumenestyksen kannalta. Koeryhmällä oli merkitsevää edistymistä verrattuna vertailuryhmään (n=108) tutkittavissa dimensioissa. Tämä osoittaa, että YSO voi hyödyttää heikosti portugaliala äidinkielenään osaavia.

AVAINSANAT: alhainen suoritustaso, yhdeksännen luokan oppilaat, lukemisen ymmärtäminen.

**French**

[Translation Laurence Pasa]

TITRE. PROGRAMME D'ENSEIGNEMENT DES STRATÉGIES DE COMPRÉHENSION (PSC) POUR DES ÉLÈVES DE NEUVIÈME ANNÉE AYANT UN FAIBLE NIVEAU DE RÉUSSITE EN PORTUGAIS : ÉTUDE QUASI-EXPÉRIMENTALE

RÉSUMÉ. Cet article présente un Programme d'Enseignement des Stratégies de Compréhension (PESC) conçu pour améliorer la compréhension en lecture d'élèves en difficultés d'apprentissage. Le programme a été mis en œuvre auprès de 102 élèves de neuvième année issus d'écoles publiques portugaises ayant un faible niveau de réussite en portugais. Une évaluation a été faite afin de mesurer les effets de l'intervention sur la compréhension en lecture et sur la réussite scolaire. Comparé au groupe témoin (N = 108), le groupe expérimental a progressé de façon significative sur les dimensions considérées. Cela montre que le PESC peut aider des élèves de faible niveau ayant le portugais comme langue maternelle.

MOTS-CLÉS : faible niveau de réussite, élèves de neuvième année, compréhension en lecture

**German**

[Translation Ulrike Bohle]

TITEL. Verstehensstrategieprogramm für Neuntklässler mit niedrigen Portugiesisch-Leistungen: eine quasi-experimentelle Studie

ZUSAMMENFASSUNG. Der Artikel beschreibt die Anwendung eines Verstehensstrategieprogramms (Comprehension Strategies Programme, CSP), das zur Verbesserung des Leseverstehens von Schülern mit Lernschwierigkeiten entwickelt wurde. Implementiert wurde das Programm bei 102 Schülern der neunten Klassenstufe an öffentlichen Schulen in Portugal, die in einem bestimmten Fach schlecht abschnitten: Portugiesisch. Die Effekte des Programms auf das Leseverstehen sowie auf die Schulleistungen wurden evaluiert. Im Vergleich zur Kontrollgruppe (N = 108) zeigte die Versuchsgruppe eine signifikante Verbesserung in den berücksichtigten Dimensionen. Dies zeigt, dass das CSP positive Auswirkungen für lernschwache Schüler mit Portugiesisch als Erstsprache haben kann.

SCHLAGWÖRTER: geringe Leistungen, neunte Klassenstufe, Leseverstehen

**Greek**

[Translation Panatoya Papoulia Tzelepi]

Τίτλος. Πρόγραμμα στρατηγικών κατανόησης (ΠΣΚ) για μαθητές της Ένατης τάξης (Τρίτη Γυμνασίου) χαμηλής επίδοσης στα Πορτογαλικά: Μια ημειραματική μελέτη

Περίληψη. Αυτό το άρθρο περιγράφει την εφαρμογή ενός προγράμματος στρατηγικών κατανόησης (ΠΣΚ) σχεδιασμένου να βελτιώσει την κατανόηση της ανάγνωσης μαθητών με μαθησιακές δυσκολίες. Το πρόγραμμα υλοποιήθηκε σε 102 μαθητές της Ένατης τάξης σε μαθητές δημοσίου Πορτογαλικού σχολείου, με χαμηλή επίδοση σε ένα μάθημα, τα Πορτογαλικά. Μια αξιολόγηση υλοποιήθηκε για τα αποτελέσματα του προγράμματος στην κατανόηση της ανάγνωσης και στην σχολική επίδοση. Η Πειραματική Ομάδα παρουσίασε σημαντική βελτίωση όταν συγκρίθηκε με την Ομάδα Ελέγχου (N=108) στις υπό μελέτη διαστάσεις. Αυτό δείχνει ότι το ΠΣΚ μπορεί να ωφελήσει μαθητές με χαμηλή επίδοση που έχουν τα Πορτογαλικά ως μητρική γλώσσα.

Λέξεις κλειδιά: χαμηλή επίδοση, μαθητές 9ης τάξης (Γ. Γυμνασίου), κατανόηση της ανάγνωσης

**Italian**

[Translation Manuela Delfino, Francesco Caviglia]

TITOLO. Un programma di strategie di comprensione (PSC) con studenti della nona classe con scarso rendimento in portoghese: uno studio quasi-sperimentale

SOMMARIO. Questo articolo descrive l'applicazione di un Programma di Strategie di Comprensione (CSP) ideato per migliorare le strategie di comprensione di studenti con difficoltà di apprendimento. Il programma è stato implementato con 102 studenti di scuole pubbliche portoghesi, frequentanti la nona classe, con scarso rendimento in una specifica materia: Portoghese. È stata effettuata una valutazione degli effetti del programma sulla comprensione della lettura e sul rendimento scolastico generale. Il Gruppo Sperimentale ha presentato significativi miglioramenti rispetto al Gruppo di Controllo su entrambe le dimensioni considerate. Questo significa che il programma CSP può portare benefici a studenti che abbiano portoghese come madre lingua.

PAROLE CHIAVE: scarso rendimento, studenti della nona classe, comprensione della lettura

**Polish**

[Translation Elzbieta Awramiuk]

TITUŁ. Program Strategii Rozumienia (CSP) dla uczniów klas dziewiątych o niskich osiągnięciach

w nauce języka portugalskiego: quasi-ekperymentalne badania

STRESZCZENIE. Niniejszy artykuł opisuje zastosowanie Programu Strategii Rozumienia (CSP) utworzonego w celu poprawy rozumienia tekstu czytanego przez uczniów z trudnościami w uczeniu się. Program został zrealizowany w grupie 102 uczniów klas dziewiątych publicznej szkoły w Portugalii o niskich wynikach w nauce przedmiotu szkolnego: język portugalski. Ewaluacja dotyczyła efektów programu czytania ze zrozumieniem i szkolnych osiągnięć. Grupa eksperymentalna prezentowała znaczący postęp w porównaniu do grupy kontrolnej (n = 108) w zakresie rozważanych aspektów. Dowodzi to, że CSP może przynieść korzyści uczniom o niskich osiągnięciach, dla których język portugalski jest językiem ojczystym.

SŁOWA-KLUCZE: niskie osiągnięcia; uczniowie klas dziewiątych; czytanie ze zrozumieniem

**Portuguese**

[Translation Sara Leite]

TÍTULO. Melhorar a compreensão de alunos com fraco desempenho a português no 9.º ano: Um estudo quasi-experimental

RESUMO. Este artigo descreve a aplicação de um Programa de Estratégias de Compreensão (PEC) concebido para melhorar a compreensão de alunos com dificuldades de aprendizagem. O programa foi implementado com 102 alunos do 9.º ano de escolas públicas portuguesas com fraco desempenho numa disciplina particular: Português. Avaliaram-se os efeitos do programa na compreensão leitora e no rendimento escolar. O Grupo Experimental apresentou melhorias significativas, em comparação com o Grupo de Controlo (n=108) nas dimensões consideradas. Isto indica que o PEC pode revelar-se vantajoso para os alunos com fracos rendimentos cuja língua materna seja o português.

PALAVRAS-CHAVE: baixo rendimento, alunos do 9.º ano, compreensão leitora.

**Spanish**

[Translation Ingrid Marquez]

TÍTULO. Programa de estrategias de comprensión (pec) para estudiantes de noveno grado con bajo desempeño en portugués: un estudio quasi-experimental

RESUMEN. Este artículo describe la aplicación de un Programa de Estrategias de Comprensión (PEC) designada para mejorar la comprensión de lectura de estudiantes con problemas de aprendizaje. El programa se implementó con 102 jóvenes de noveno grado en escuelas públicas portuguesas que habían mostrado un bajo desempeño en una sola material: el portugués. Se hizo una evaluación de los efectos del programa en la comprensión de lectura y en el desempeño escolar en general. El Grupo Experimental presentó mejoras significativas al compararse con el Grupo de Control (n=108) con respecto a los parámetros evaluados. Esto indica que el PEC puede arrojar beneficios para los estudiantes de bajo desempeño que tienen como lengua materna el portugués.

PALABRAS CLAVE: bajo desempeño, estudiantes de noveno grado, comprensión de lectura.

## 1. INTRODUCTION

Over the last 30 years, there has been a great focus on the cognitive and metacognitive aspects of reading and a number of studies have focused on the processes involved in it. These studies have been mainly centred on strategic reading, on previous learning (vocabulary and background knowledge), on the structure of the text, and on the importance of task persistence ( Ehren, 2002; Gersten, Fuchs, Williams, & Baker, 2001; Mastropieri & Scruggs, 1997; Swanson, 2001; Swanson & Hoskyn, 1998; Swanson & Sachse-Lee, 2000).

Reading difficulties constitute one of the major problems for low achievement students because reading is linked to all subjects and activities in school (Pocinho & Freitas, 2003). The understanding of natural sciences concepts or of a question in a maths test is an example of that. Lopes (2002, p.63) goes further by saying that school education is *strangled by reading deficits*. Although education authorities are aware of the importance of mother tongue instruction, they rarely see its connection to other disciplines (Barry, 2002).

Programmes for reading promotion and/or correction like the *Reading Recovery Program* by Clay (1979), cit in Gagné, Yekovich and Yekovich (1993), include multiple teaching objectives and involve a diagnosis of the difficulties and strengths each student presents in reading. However, this programme was designed for beginning readers and focuses primarily on the development of word recognition strategies and fluency. Older students with reading difficulties show serious problems in understanding what they read, namely in the memorization of facts and details from

texts and in the interpretation and inferential analysis of written information (Sternberg & Grigorenko, 2001; Sternberg, Grigorenko, & Jarvin, 2001).

These difficulties become particularly persistent in teenagers because requirements for reading comprehension increase progressively throughout schooling (Deshler et al., 2001; Fisher, Schumaker & Deshler, 2002). Some individuals find it difficult to integrate, summarize and generate information because they lack strategies for monitoring comprehension; others possess an extremely limited vocabulary (lack of declarative knowledge).

Research on reading comprehension strategies for students with learning difficulties has increased substantially since the seventies (Ehren, 2005). Several meta-analyses regarding reading comprehension summarize the most relevant results and point towards better interventions in the area (Ehri et al., 2001; Ehren, 2006; Gersten et al., 2001; Gildroy & Deshler, 2005; Mastropieri & Scruggs, 1997; Swanson & Gloppe, 1999; Swanson & Hoskyn, 1998; Swanson & Deshler, 2003; Swanson & Sachse-Lee, 2000; Torgesen, 2006; Winograd & Paris, 1988/1989; Winograd, Paris, & Bridge, 1991). The measures used (dependent variables) when researching reading comprehension include retelling stories, free recall, interpretation and multiple choice questions, paraphrasing, error detection, explanation and reading comprehension standardized tests. Apart from these measures, researchers have also used assessment tests commonly used in schools.

Although there are numerous examples in the literature of how to teach students with reading comprehension difficulties, actual classroom applications are rare. Examples of the latter include two American learning strategy programmes from the Centre for Research on Learning from The University of Kansas and the Self Regulated Strategy Development (SRSD) from Graham and Harris (1999). For the purposes of the present study, we adapted the Comprehension Strategies Programme (CSP) utilized at the University of Kansas Centre for Research on Learning and used it to train Portuguese students.

### *1.1 Comprehension Strategies Programme (CSP)*

CSP is based on the Learning Strategies Curriculum (Pocinho, 2004), which, in turn, is grounded on cognitive information processing theories and is composed of three great groups of strategies: (1) acquisition strategies (includes input strategies which teach students how to obtain information from written materials – manuals, books, novels, texts – or from oral explanations); (2) storing strategies (includes information processing strategies with the objective of helping students organize, store and retrieve information); and (3) competency expression and demonstration strategies (includes output strategies with the purpose of teaching students to perform school tasks, to express themselves through writing and to do written or oral tests and exams). Each of these groups is, therefore, composed of several different specific learning strategies with the purpose of improving teenagers' competencies given the demands of the educational curriculum they face. Each strategy is composed of eight teaching stages or steps, integrated accordingly to observable actions and cognitive processes that make students capable of solving a problem or of finishing a task suc-

cessfully (Ellis et al., 1991). They are: (1) pre-test and contract, (2) description, (3) modelling, (4) verbal practice, (5) controlled practice, (6) advanced practice, (7) post-test and feedback and (8) generalization (orientation, activation, adjustment and maintenance of the learned strategy) (table 1).

*Table 1 - The 8 reading comprehension strategy steps*

Stages	Objectives	Methodologies
1 Pre-test and Contract	Assess paraphrasing and reading comprehension competencies (pre-test). Draw a contract in which student/teacher commit to learn/teach this strategy as an alternative to current habits.	Pre-test; paraphrasing a 5 paragraph text (with audio recording) and answering 10 reading comprehension questions. Individual feedback.
2 Description	Describe the strategy; its characteristics and the situations where the students can apply it, the steps and the results that can be expected after learning them.	Direct strategy training resorting to the RID mnemonic – <i>Read, Main Idea, Details</i> .
3 Modelling	Demonstrate the use of the strategy; get the students involved to check if they understand the cognitive processes involved.	Modelling some paragraphs' paraphrasing by the teacher, out loud.
4 Verbal Practice	Insure students memorize all the strategy steps.	Verbal exercise "rapid fire" in group.
5 Controlled Practice and Feedback	Insure students reach mastery of the control materials (students' reading material).	Practice with texts suggested by teachers and students. Paraphrase assessment. Individual feedback
6 Advanced Practice and Feedback	Insure students reach mastery using the strategy when reading materials from the reading level of their classes and respective programme contents.	Practice with Portuguese manuals' texts. Paraphrase assessment. Individual feedback
7 Post-test and Contract	Reassess paraphrasing and reading comprehension competencies (post-test). Draw a contract to use in different situations and contexts.	Post-test paraphrasing a 5 paragraph text (with audio recording) and answering 10 reading comprehension questions. Individual feedback. Signing the contract.
8 Generalization Phase I Orientation	Make students aware of situations and contexts where the " <i>Reading Comprehension</i> " strategy can be used.	Create strategy application lists. Individual feedback.
8 Generalization Phase II Activation	Insure that students use the strategy in a variety of situations and contexts.	Answering reading comprehension questionnaires in the regular classroom. Individual feedback.
8 Generalization Phase III Adaptation	Insure students are aware of the cognitive strategies involved and the situations and circumstances in which the strategy can be adapted. Promote students' self-confidence to generalize the strategy.	Adaptation of the strategy to reading books, summarizing,..., out of school.
8 Generalization Phase IV Maintenance	Insure students don't forget the strategy's steps and keep using it correctly.	Doing comprehension monitoring tests (once in a while during the year, for example, on the day before tests).

The reading comprehension strategy consists of a set of extra-curricular sessions with the purpose of teaching students comprehension and interpretation techniques of texts presented either during the Programme sessions or the regular Portuguese classes, or even in other disciplines and real life situations.

Reading comprehension is done in silence or out loud and, in addition to including specific comprehension strategies, the sessions also contain training on meta-cognitive reading competencies, for example: self monitoring, interrogation, processing speed, synthesis/summary, problem-solving strategies, discussions about readings, strategic reading, repeated reading and consciousness of the strategies' use. In every session, advanced organisers are used as a starting point for motivation and students' implication in the strategy. The teacher is responsible for teaching vocabulary; nevertheless, in the course of the sessions, the students can consult the dictionary when necessary. In the first sessions modelling the use of the dictionary is frequently necessary, as many students do not know how to do an alphabetic search.

The process of teaching the CSP strategy is divided into two phases – paraphrasing and reading comprehension – and is assessed, in the beginning and the end, by the following tools:

*1. Paraphrasing pre-test and post-test.* The students read a text, with at least five paragraphs, in silence. Every time they finish a paragraph they should stop reading, turn on the sound recorder and describe what they have learned from the paragraph into the microphone. In the case of not having access to any sound recording device, each student registers their respective paraphrases, following the procedures used for the audio register, in an appropriate form. Each statement of the student's recording is assessed using a scoring form that includes general ideas and details, with a maximum of 15 points.

*2. Comprehension pre-test and post-test.* The students are tested on the material they have been reading on the previous session through a questionnaire (10 questions). The scoring of the comprehension test is quantified by the percentage of correct questions.

After students' competencies in paraphrasing and reading comprehension are assessed through a pre- test (in which each student should paraphrase a text with five paragraphs and answer ten reading comprehension questions of that text), a learning contract is established with the students. The benefits of the Comprehension Strategies Program (CSP), the use of strategies as well as all the steps involved in the program are described to the students and, in our case, the procedure was designated by the abbreviation "RID" (Table 2). The general idea and the details are searched through the guidelines in Table 3.

A text paraphrasing results in writing phrases about each paragraph (or set of paragraphs). Each paraphrase should follow the following criteria:

- 1) Have a complete thought with a noun and a verb;
- 2) Be exact/precise;
- 3) Make sense;

- 4) Contain useful information;
- 5) Be stated through their own words;
- 6) Only one general phrase per paragraph is allowed.

This task is, when possible, replaced by oral expression of the paraphrases into an audio recorder. The paraphrases are assessed taking into account the evaluation criteria in a scoring form. In other words, the criteria include the way the paraphrased statements are adequate and related to the text. Afterwards, the scoring regarding mastery is calculated and each student records his or her progress in a tracking progress graph. After each paraphrasing activity, a reading comprehension test is given with a similar structure to the pre-test.

*Table 2 - Reading comprehension strategy steps (RID)*

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1: Read one paragraph  
 2: Main Idea  
 3: Details

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*Table 3 - How to look for the main idea and details*

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Look for main idea

QUESTIONS TO ASK

This paragraph is about...

Or

The main idea of this is ...

Details are...

WHERE SHOULD I LOOK?

1. On the first phrase of the paragraph.
  2. In the word(s) repeated in the paragraph.
  3. In the last phrase.
- 

This strategy is used for several sessions and, in our study, after the extra-curriculum sessions the students applied the same strategies in their regular Portuguese subject class; the practice of the strategy is thus generalized to other situations and a post-test is done. At the end of the sessions regarding strategy instruction and reading



comprehension, it was expected that most of the students would read and interpret texts in a more efficient and fast manner.

In summary, the CSP is a comprehension cognitive training programme and should include, if possible, the following (Gersten et al., 2001; Swanson, 2001): (1) direct question/answer: the approach is related to the Socratic or dialectic method of questioning and answering between students and teachers; (2) control of the difficulty of the task: includes short activities, control of the level of difficulty of the task, monitoring the student's work, simplified demonstration of the activity, sequencing from the simpler to the most complex and task analysis; persistence on the task; (3) elaboration; (4) modelling each stage; (5) group lessons; (6) specific reading techniques; (7) sequencing; (8) segmentation; and (9) pre-reading organisers.

Apart from these aspects, reading comprehension can be improved if the following procedures are taken into account: (1) assessing students' prerequisites regarding reading; (2) giving feedback and systematic instruction, including independent and guided practice; (3) link strategies with text learning; (4) inform students of the objectives of the strategies and attribute success or failure to their adequate or inadequate use; (5) include self monitoring; (6) assess students' performance through measures thoroughly specified; and (7) reinforce and take into account students' previous learning. In addition, most authors (Forness et al., 1997) refer that some material adaptations like pictures, images, schemes, mnemonics, special organisation, study guides, among others, may clearly improve reading comprehension.

## 2. THE STUDY

### 2.1 Hypothesis

Our hypothesis was that participation in the extra-curricular learning strategy programme would significantly improve students' reading comprehension.

### 2.2 Method

The CSP's (Comprehension Strategies Programme) guideline is the Graduate Level Course In Strategic Instruction Model Learning Strategies Level I, which was attended by the researcher at The University of Kansas in 2001. During that course, the researcher obtained permission to translate it and use the manuals and materials from this Centre for her investigation. The manuals used were: "Paraphrasing Strategy" (Schumaker, Denton & Deshler, 1999), "The word identification strategy" (Lenz, Schumaker, Deshler & Beals, 2000), "The concept mastery routine" (Bulgren, Schumaker & Deshler, 2000), and "The test-taking strategy" (Hughes, Schumaker, Deshler & Mercer, 2000).

When designing the CSP, other empirically validated studies were also selected, with adequate scientific methodologies which aimed at improving students' performance (e.g., Ellis, Deshler, Lenz, Schumaker & Clark, 1991; Harris & Pressley, 1991; Mastropieri & Scruggs, 1998; Swanson & Sachse-Lee, 2000; Winebrenner, 2003).

The CSP was implemented with ninth grade students with low achievement in Portuguese. The ninth grade corresponds to the end of compulsory education in Portugal. The students were split into eight working groups and had a total of 60 to 80 sessions, depending on the specificity and dynamic of each group. The programme was implemented between January and June of the school year and it included two sessions a week, (for 30 to 40 weeks) of 45 to 55 minutes each. The research was done in public schools that teach up to the ninth grade and have students from all social backgrounds, including schools from urban and rural environments.

The pre and post-tests are very similar in terms of textual structure, although with different contents, in order to guarantee the most similar conditions possible. The theme of the text was chosen taking into account the participants' interests (the sea, because they live in an island) and the minimum expected knowledge at their grade level. The interpretation questions were practiced and validated by 8 teachers from Funchal and by 25 students of the same learning level of the students from the experience.

The *reading comprehension test* (pre and post-test) is composed of a group of four sets of text interpretation questions, similar to the tests that Portuguese subject teachers use with ninth grade students. The answers to the comprehension questions are open-ended and were scored according to criteria gauged by the teachers and Portuguese Study experts who collaborated in the program.

Taking into account the issue of assessment subjectivity, Portuguese teachers, along with an external evaluator unaware of the groups' (EG and CG) and subjects' identification, met in order to define correction and rating criteria (text organisation, orthography, grammatical rules, ideas/content expression...), in order to make assessment as homogeneous as possible. The following procedures were followed:

- 1) Clarification of the assessment parameters;
- 2) Building a rating scale;
- 3) Evaluator's analysis and classification, as a rehearsal for similar tests and before rating tests;
- 4) Development of re-reading, re-evaluation and eventual evaluator's test reclassification procedures after the first phase of test rating;
- 5) Comparison of results from the rating given by teachers and the external evaluator.

For the Program implementation phase, four schools were randomly chosen.

### 2.2.1 *Participants*

Teachers. The Regional Educational Secretariat sent a notice to the Executive Directors of the selected schools asking for collaboration in this investigation. Six Portuguese subject area teachers with identified low achieving students on that subject were invited to participate. All the invited teachers willingly accepted participating in this experiment. The sample of teachers that participated in this research taught Portuguese. The teachers from the EG (Experimental Group), in total four, one man and three women, had a degree in Languages and Modern Literature, and aged be-

tween 30 and 40 years (having as reference the year of implementation of the programme).

The teachers in the CG (Control Group), in total four, all women, had a degree in Languages and Modern Literature, and were aged between 30 and 50 years.

*Students.* Initially, 210 students (102 for the EG and 108 for the CG) were selected. Excluded from the sample were subjects not willing to participate in the activity and those who for reasons beyond the scope of the research did not show up for the pre and/or post-test sessions, making it impossible to obtain a pre or post-test measure. The sample was composed of ninth grade students (N=210) during the school year: 110 girls and 100 boys. Most of them were 14-15 years old, from urban areas (58.6%) and from middle to lower class background (63.1%). The 210 subjects that constituted the sample were randomly distributed into two groups: the EG and the CG, each corresponding to 8 subgroups, distributed throughout four schools, 2 groups in each.

The programme was then implemented with 102 students and 108 formed the CG, attending the same schools, with low achievement in Portuguese. This group, CG, received alternative educational treatment, which was composed of a neutral treatment. This consisted of using activities related to reading, library promotion and other varied activities conducted during study hall with head teachers. Students did not know if they were in the Programme or the neutral treatment. Additionally, because the people in charge of implementation could reveal, even ever so subtly, if they were using the new or neutral approach, and also because in the school environment it is not possible to alter class constitution or teachers' distribution, different teachers were used for each different control group.

Students were selected with basis on the grades they received in the last term of the school year prior to the implementation of the study. The selected students, although not requiring special needs education, had low achievement in Portuguese and were perceived by their teachers as needing "support" because they presented difficulties in mastering the Portuguese language.

*Inter-group differences before treatment.* To verify possible differences between EG and CG groups before intervention, all sample students' biographic data, personal characteristics and cognitive processes involved in comprehension and written expression were assessed. These included:

- 1) Biographic data: age, gender, place of birth, and socioeconomic status;
- 2) Cognitive processes: attention, intellectual and verbal reasoning;
- 3) Pre-test and final grades in Portuguese from December of the school year;
- 4) Personal characteristics (pre-test): self-esteem, causal attributions for achievement and learning and studying habits.

The statistical analysis of the differences between groups was expressed through results obtained after applying the Pearson Chi-square test ( $\chi^2$ ), with Yates' correction for continuity in the 2X2 tables, the Mann-Whitney test (for independent and not normal samples) and t-tests to analyse differences between averages in independent normal samples.

The statistical analyses of group differences started by applying Pearson's  $\chi^2$  test to the variables "gender", "origin or residence" and "socioeconomic status", and there were no statistically significant differences (no  $p < 0.05$ ) between EG and CG regarding the same variables. An alternative test to t-student, the Mann-Whitney was used for two independent and non normal samples and the results showed that there were also no significant differences between EG and CG regarding the variable "age" ( $p > 0.05$ ). Regarding results obtained from the intellectual reasoning and capacity test (PM-38 - Raven's Progressive Matrices), verbal reasoning (Predictive Battery of Differential Reasoning) and attention (Toulouse-Piéron's Dam Test), there were no statistically significant differences between EG and CG with  $p > 0.05$  in the t-Student tests for independent samples<sup>1</sup> (Table 4).

*Table 4. EG and CG psychological assessment: Raven Progressive Matrices Test, Verbal Reasoning and Toulouse-Piéron Dam Test*

	EG (N=102)		CG (N=108)		T-Student test	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>P</i>
Raven Progressive Matrices	39.200	6.650	40.050	8.410	-0.797	0.426
Verbal Reasoning	21.359	5.679	20.810	5.350	0.701	0.484
Toulouse-Piéron Dam Test	22.726	7.418	24.179	6.662	-1.464	0.145

As can be seen in Table 4, the scores obtained by the sample (N=210) on Raven's Progressive Matrices (EG: average=39.2; CG: average=40.1), according to the manual's instructions, taking into account the type of application (in group and without time limit) and the age, are situated on the 25<sup>th</sup> percentile (which corresponds to raw scores between 39 for the 13 year-olds and 47 for the 18 year-olds), which suggests that students had poor reasoning and problem solving skills.

Regarding Verbal Reasoning, following the scoring norms of the author of the ninth grade test, the average scoring obtained by the sample (EG: average=21.4; CG: average=20.8) is situated within the normal parameters, which means that the subjects have reasonable verbal aptitudes. Finally, regarding scores obtained from the Toulouse-Piéron Dam test, the average obtained by the sample (EG: average=22.7; CG: average=24.2) was situated between the 50<sup>th</sup> and 75<sup>th</sup> percentile, which suggests that subjects had poor concentration and possibly short attention spans.

Regarding Reading Comprehension Tests (pre-test), because the variable "pre-comprehension test" does not follow a normal distribution, the t-Student test cannot be used and, therefore, the non-parametric Mann-Whitney test was used instead. As shown on Table 5, there were no significant differences among the groups (all of them  $p > 0.05$ ).

<sup>1</sup> *These variables follow a normal distribution, according to the Kolmogorov-Smirnov test.*

Table 5 - Reading Comprehension Test descriptive statistics (pre-test) (N=210)

	EG (N=106)		CG (N=97)		Mann-Whitney test	
	<i>M</i>	<i>S.D.</i>	<i>M</i>	<i>S.D.</i>	<i>Z</i>	<i>p</i>
Comprehension Pre-test	18.537	7.599	19.619	8.316	-0.607	0.544

The t-Student test was used to assess the differences between groups regarding their Portuguese grades at the end of the first term (December) which showed there also are no statistically significant differences between the two groups ( $t=-9.44$ ;  $p>0.05$ ).

Regarding personal characteristics, self-esteem was measured with the Susan Harter scale. Results showed no significant differences between EG and CG in any of the sub-scales before the experiment (all  $p>0.05$ ), and therefore, the groups are also equivalent regarding this variable.

### 3. RESULTS

The purpose of the pre and post-test of the comprehension strategy was to evaluate the reading comprehension skills of the students, before and after programme implementation. The Mann-Whitney test was applied and the result was that there were significant differences between the groups, both in paraphrasing ( $Z=-7.854$ ;  $p<0.001$ ), and in reading comprehension ( $Z=-16.461$ ;  $p<0.001$ ).

When the students began using paraphrasing independently, during the Controlled Practice Stage, the majority improved progressively their scores although 10 subjects did not improve positively and 5 got the same results as in the pre-test.

After applying the Wilcoxon test, significant differences were reported between the pre and post-test, which shows that the students improved their text paraphrasing skills ( $p<0.001$ ). As a consequence of improved levels of Paraphrasing, the students improved significantly their achievement in the comprehension post-test from 41.5% to 74.4%, at the end of the strategy. Significant differences were observed between the pre and post-test, which shows that students improved their text comprehension, on average, about 32.97% each ( $p<0.001$ ).

The EG students had an average improvement of 11.63, while the CG had only 3.99 points. These results were confirmed with the Wilcoxon test  $p<0.001$ .

Regarding school achievement in Portuguese, in the third term, there was a significant increase in the number of passing grades (3 and 4 on a five point scale) in the EG: from 59% to 88%, while the CG values showed considerable stability, remaining more or less constant. The *Mann-Whitney* test, for independent and non normal samples, was applied and significant differences were observed between grades obtained in the third term by the EG and CG ( $Z=-2.911$ ;  $p=0.004$ , therefore,  $p<0.01$ ) (Figure 1).

#### 4. CONCLUSION

The results obtained from the analysis of the written essay show that in the pre-test, both groups (EG and CG) obtained similar average scores, however, there were statistically significant differences in the post-test. As showed above, the Mann-Whitney test revealed significant differences between the groups ( $Z=6.601$ ;  $p < 0.001$ ), demonstrating significant changes in reading comprehension in the EG ( $p < 0.001$ ), which were not verified in the CG ( $p > 0.05$ ).

At the beginning of the experience, both groups (EG and CG) were homogeneous regarding biographic data (age, gender, origins or residence, socioeconomic background), intellectual capacities (verbal reasoning, problem solving and attention/concentration) and performance in Portuguese, assessed from the 1<sup>st</sup> term grades and scores obtained in the Portuguese subject pre-test. The sample was also homogeneous regarding personal characteristics (self-esteem, causal attributions for achievement and learning and study habits).

These results seem to indicate that the learning strategies programme can bring benefits or positive effects on Portuguese mother tongue comprehension of students with low achievement in Portuguese.

One of the limitations of this study is related to the fact that the students were assessed in experimental contexts during only one school year, with no continuity or follow-up. There are also several difficulties inherent to the Programme validation. The researcher herself did the programme efficacy evaluation; also, there can be experiment replication problems given its extent and the amount of training it required.

Although still in reconstruction and reformulation phase, and having been only applied to one discipline – Portuguese, we believe there are sufficient reasons to continue researching the efficacy of cognitive inspired methodologies. Teaching learning strategies can become a powerful instrument to fight and prevent low achievement, to promote teaching quality and, ultimately, increase the quality of life and socio-cultural progression of any country or region.

#### 5. SUGGESTIONS FOR FUTURE STUDIES AND INTERVENTIONS

In face of the experimental conditions and the results achieved, it is suggested that the study should constitute the starting point to following research which include a larger number of schools, teachers, subjects and students. Research of this nature implies the use of assessment tools and rigorous and diverse diagnosis, not only regarding reading comprehension, but also metacognitive processes, motivation, self-esteem and classroom dynamics. Gersten and Baker (2001) advise that action research should be done in the actual classroom and other school contexts.

One matter that should be further investigated is the generalization of the learnt strategies to other learning contexts and situations. The application of a programme of reading comprehension strategies for students with low achievement in Portuguese should assess the efficacy levels of teaching it in terms of its permanent effects regarding achievement in other subjects or disciplines. In addition, such applications should assess the participants' academic and professional paths over time.

The pre-service training and in-service training of any teacher, not only Portuguese teachers, given the cross-curriculum issues mother tongue education encompasses, should take into account contributions from Cognitive Psychology in the subject of learning strategies. All cognitive inspired programmes should be scientific and pedagogically demanding, coherent, rigorous, and capable of inspiring responsibility and diligence in the trainees, so as to give the same opportunities of reaching mastery in verbal competencies to all students.

## REFERENCES

- Barry, A. L. (2002). Reading strategies teachers say they use. *Journal of Adolescent & Adult Literacy*, 46(2), 132-141.
- Bulgren, J. A., Schumaker, J. B., & Deshler, D. D. (2000). The concept mastery routine. Lawrence: Edge Enterprises, Inc.
- Deshler, D., Schumaker, J., Bulgren, J., & Lenz, K. (2001). Making learning easier: Connecting new knowledge to things students already know. *Teaching Exceptional Children*, 33(4), 82-88.
- Ehri, L. C., Nunes, S. R., Stahl, S. A., & Willows, D. M. (2001). Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's Meta-Analysis. *Review of Educational Research*, 71(3), 393-447.
- Ehren, B.J. (2002). Vocabulary intervention to improve reading comprehension for students with learning disabilities. *Perspectives on Language and Education*, 9(3), 12-18.
- Ehren, B.J. (2005). Looking for evidence-based practice in reading comprehension instruction. *Topics in Language Disorders*, 25(4), 310-321..
- Ehren, B.J. (2006). Partnerships to support reading comprehension for students with language impairment. *Topics in Language Disorders*, 26(1), 42-54.
- Ellis, A., Deshler, D. D., Lenz, B. K., Schumaker, J. B., & Clark, F. L. (1991). An instructional model for teaching learning strategies. *Focus on Exceptional Children*, 23(6), 1-24.
- Forness, S. R., Kavale, K. A., Blum, I. M., & Lloyd, J. W. (1997). Mega-analysis of meta-analyses. *Teaching Exceptional Children*, 29(6), 4-9.
- Fisher, J.B., Schumaker, J.B., & Deshler, D.D. (2002). Improving the reading comprehension of at-risk adolescents. In C.C. Block & M. Pressley (Eds.), *Comprehension instruction: Research-based best practices* (pp. 351-364). New York: Guilford Press.
- Gagné, E. D., Yekovich, C. W., & Yekovich, F. R. (1993). *The cognitive psychology of school learning*. New York: Harper Collins.
- Gersten, R., & Baker, S. (2001). Teaching expressive writing to students with learning disabilities: A meta-analysis. *The Elementary School Journal*, 101(3), 251-272.
- Gersten, R., Fuchs, L. S., Williams, J. P., & Baker, S. (2001). Teaching reading comprehension strategies to students with learning disabilities: A review of research. *Review of Educational Research*, 71(2), 479-530.
- Gildroy, P., & Deshler, D.D. (2005). Reading development and suggestions for teaching reading to students with learning disabilities. *Insights on Learning Disabilities* 2(2), 1-10.
- Graham, S., & Harris, K. R. (1999). Assessment and intervention in overcoming writing difficulties: An illustration from the self-regulated strategy development model. *Language, Speech & Hearing Services in Schools*, 30(3), 255-269.
- Harris, K. R., & Pressley, M. (1991). The nature of cognitive strategy instruction: interactive strategy construction. *Exceptional Children*, 57(5), 392-404.
- Hughes, C. A., Schumaker, J. B., Deshler, D. D., & Mercer, C. D. (2000). *The test-taking strategy*. Lawrence: Edge Enterprises, Inc.
- Lenz, B. K., Schumaker, J. B., Deshler, D. D., & Beals, V. L. (2000). *The word identification strategy*. Lawrence: University of Kansas.
- Lopes, J. A. (2002). *Problemas de comportamento, problemas de aprendizagem e problemas de "ensinagem"* [Behaviour problems, learning problems and teaching problems], Coimbra: Quarteto Editora.
- Mastropieri, M. A., & Scruggs, T. E. (1997). Best practices in promoting reading comprehension in students with learning disabilities 1976 to 1996. *Remedial and Special Education*, 18(4), 197-222.

- Mastropieri, M. A., & Scruggs, T. E. (1998). Enhancing school success with mnemonic strategies. *Intervention in School and Clinic*, 33(4), 201-212.
- Pocinho, M. (2004). *Psicologia cognitiva e língua materna. Avaliação da eficácia dum programa de estratégias de aprendizagem para alunos com insucesso escolar em língua portuguesa*. [Cognitive psychology and mother tongue: Evaluation of a Learning Strategies Programme for students with low achievement in Portuguese] Tese de Doutoramento não Publicada. University of Madeira. Funchal
- Pocinho, M., & Freitas, Z. (2003, July). *Learning and teaching as a team*. Paper presented at the 4th International Association for the Improvement of Mother Tongue Education (IAIMTE) International Conference, the 28 to 30 July, Lisbon, Portugal.
- Schumaker, J. B., Denton, P. H., & Deshler, D. D. (1999). *The paraphrasing strategy*. Lawrence: The University of Kansas.
- Sternberg, R. J., & Grigorenko, E. L. (2001). Learning disabilities, schooling, and society. *Phi Delta Kappan*, 83(4), 335-338.
- Sternberg, R. J., Grigorenko, E. L., & Jarvin, L. (2001). Improving reading instruction: the triarchic model. *Educational Leadership*, 58(6), 48-52.
- Swanborn, M. S. L., & de Glopper, K. (1999). Incidental word learning while reading: a meta-analysis. *Review of Educational Research*, 69(3), 261-285.
- Swanson, H. L. (2001). Searching for the best model for instructing students with learning disabilities. *Focus on Exceptional Children*, 34(2), 1-14.
- Swanson, H.L. & Deshler, D.D. (2003). Instructing adolescents with learning disabilities: Converting a meta-analysis to practice. *Journal of Learning Disabilities*, 36(2), 124-135..
- Swanson, H. L., & Hoskyn, M. (1998). Experimental intervention research on students with learning disabilities: A meta-analysis of treatment outcomes. *Review of Educational Research*, 68(3), 277-321.
- Swanson, H. L., & Sachse-Lee, C. (2000). A meta-analysis of single-subject-design intervention research for students with LD. *Journal of Learning Disabilities*, 33(2), 114.
- Torgesen, J. K. (2006, April). *Interventions for Students with Reading Disabilities: Requirements at the School and Classroom Level*. Paper presented at the Overcoming Dyslexia Conference, Springfield, Mass, April, Florida State University and Florida Center for Reading Research.
- Winebrenner, S. (2003). Teaching strategies for twice-exceptional students. *Intervention in School and Clinic*, 38(3), 131-141.
- Winograd, P., & Paris, S. G. (1988/1989). A cognitive and motivational agenda for reading instruction. *Educational Leadership*, 30-36.
- Winograd, P., Paris, S. G., & Bridge, C. (1991). Improving the assessment of literacy. *The Reading Teacher*, 45(2), 108-116.