Note Taking and Learning: A Summary of Research

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Introduction

The activity of note taking can be considered part of Writing Across the Curriculum. It crosses over all disciplines and has the two characteristics of Writing Across the Curriculum: note taking helps students learn, and note taking helps students learn to write.

Even though techniques for understanding and writing texts are widely taught and practiced throughout a student's school and university career, very few students are taught even basic "note taking" skills. This despite the fact that students are expected to take extensive notes during their courses across the curriculum, and despite the recognized usefulness of note taking for storing, learning and thinking about what is being taught.

The functional complexity of note taking has not been sufficiently accepted by researchers and teachers, undoubtedly because the representation concerning the knowledge and skills it involves has been minimized. Too often, note taking is seen as the rapid transcription of information by using a few condensing techniques, such as shortened words and substitution symbols, for the creation of an external memory whose only importance will be its later use. The work presented in this article shows that we can go much further than this minimalist view.

This paper provides an overview of the research carried out in the fields of cognitive psychology, linguistics, and teaching science relevant to this specialized form of writing (see also, Piolat & Boch, 2004). It briefly presents four aspects of note taking: (1) the principal functions of note taking: "writing to learn"; (2) the main note taking strategies used by students; (3) the different factors involved in the comprehension and learning of knowledge through note taking; (4) the learning contexts that allow effective note taking: "learning to write."

1. What are the functions of note taking?

Note-takers take notes to fulfill two major functions: to record information and/or to aid reflection. Over and above the drawing up of a simple memory aid, such as a shopping list, or a record of actions, such as a diary, one of the major aims of note taking is to build up a stable external memory in a form that can be used at a later date. Confronted with a diverse range of information-transmission situations, note-takers are striving to avoid forgetting

something. Note taking is an essential tool in many information-transmission situations. At the university level, which is the level we are interested in here, note taking allows students to gather information from lectures, books, or any other situation that they will later have to memorize or use in order to successfully complete their academic program. Storage methods vary from "copy-regurgitate" strategies, which have proven to be effective from a scholastic point of view, to more complex "reformulation-interpretation" strategies. These are less frequently used by students (Boch, 1999; Van Metter, Yokoi, & Pressley, 1994), probably because they are more risky: it is more difficult to faithfully reproduce the source information when this information has been reformulated rather than simply transcribed.

The use of note taking to store transmitted information often overshadows another important role—reflection. Note taking is an effective information-processing tool that is commonly used both in daily life and in many professions (Hartley, 2002). As such, it contributes to the carrying out of a range of intellectual processes, such as making judgments, resolving issues, and making decisions. The taking of notes can aid time-consuming, real-time thought processes, such as the resolution of mathematical problems. In this respect, notes are similar to a rough draft in that they allow information to be coded, thereby relieving mnemonic processes and consequently helping with the development of the solution (Cary & Calson, 1999).

Primary schools, secondary schools, and universities provide their students with no (or very little) help in acquiring the skills needed to successfully develop these two essential write-to-learn functions: (1) taking notes to stabilize the knowledge to be acquired and reproduced during "course question" type examinations and (2) taking notes to effectively resolve problems, whether this is understanding complex documents, writing reports, or solving algebraic equations.

2. How are notes taken?

The average writing speed of a student is around 0.3 to 0.4 words/second, whereas a lecturer speaks at a rate of around 2 to 3 words/second. Unless everything is said at dictation speed, or students develop exceptional shorthand skills, teachers will never speak slowly enough for students to write down everything that is said. As a result, students intuitively develop processes and methods that allow them to record the content of lessons. Without going into detail about the linguistic processes used, which are well known, such as the use of abbreviations, truncating long words, and apocopes, we would like to briefly look at the markers in a speaker's text that signal, more or less explicitly, the importance of what is being said. Note-takers are very attentive to these markers, which have a considerable influence on the quantity of notes taken.

The indicators that trigger note taking, identified by several research studies using quantitative methods (Boch, 1999; Branca-Rosoff & Doggen, 2003) are the following:

- Writing on the board: a very powerful indicator. (Teachers are well advised to choose what they write on the board carefully, as it's extremely likely to be included in the note taking!)
- "Dictation": when the teacher acts as if he or she is dictating the information (slow delivery, low vocal register).
- A title of a section or a list or the listing of information (which, moreover, are often written on the board).
- Definitions, catch phrases. (Even if students don't understand them, they overwhelmingly take notes on them.)
- Macro-textual planning indicators that organize and structure the classes (expressions such as "firstly"/"secondly" or "first question"/"second question").

All these indicators are very much tied to written communication. We can, moreover, assume that the information dealt with here has been subject to note taking by the teacher beforehand. The student intuitively recognizes it as important because the teacher has planned and often written it.

Alongside these indicators that trigger note taking, we can assume that some forms discourage note taking. We consider the following as "*inhibiting indicators*":

- Parentheses or asides: sequences that do not contribute to the organization of what is said and that we intuitively perceive as often being introduced with a lower intentional register.
- Interaction in class between the teacher and the students (responses by the teacher to students' questions) or, worse, between students.
- Prosodic phenomena, which are symmetrically opposed to those that characterize the trigger indicators: faster delivery, higher vocal register. These indicators often accompany the asides, parentheses, and digressions.
- Hesitations in speaking, which are probably signs that what is being said has not been planned by the teacher.
- Certain paraverbal indicators: when the teacher puts aside his or her notes or walks around the classroom, the student statistically takes less trouble to note what is being said at that time.

The point in common with all these inhibiting indicators is that they are the product of a real, oral communication situation. Because of this, information considered not planned because not written is not taken into account by the student. Yet, we can assume that it's during these moments that com-

prehension hangs in the balance: examples and explanations are given that could be useful to note. Teachers are therefore well advised, if they want such information to be taken down as notes, to say so explicitly to their students or use an explicit indicator such as "careful, this is important!"

In the case of the reading of texts, the favorable effect of various elements on comprehension, such as subtitle, numbering of the various parts, and introductory expressions such as *There are four types of ...* (Sanchez, Lorch, & Lorch, 2001) has been demonstrated. These indicators are used and also much sought-after because they encourage the pinpointing of important ideas as well as their organization within the text.

As already mentioned, one of the ways of responding to a note taking situation is, when possible, to use a method for processing the information as a whole (for a summary of the different methods, see Piolat, 2001). Nevertheless, it has been shown that most students, wishing to remain faithful to the teacher's words and in order to reproduce them during examinations, adopt a linear method of note taking that gives the notes a relatively classic "textual" appearance. This objective is particularly clear-cut in notes taken by students at higher levels in the university system (Boch, 1999). The use of a variety of note taking methods is much more common in the professional world.

3. How does note taking facilitate the study of the different factors that play a role in the understanding and learning of knowledge?

In general, students take notes in order to record information that they will need to learn at a later date. However, the result of taking notes is much more than the production of a passive "external" information store, as the note taking action itself is part of the memorization process and results in the creation of a form of "internal" storage (Kiewra, 1987). Furthermore, the taking of notes seems to ease the load on the working memory and thereby helps people resolve complex problems.

Note-takers are assumed to re-read their notes as many times as necessary for them to learn their content. Several papers have been written describing the modalities of this activity, comparing different ways of using notes (reading, highlighting, summarizing) and the impact of the different sources of information that are used during this learning process (handouts provided by the teacher, textbooks, student notes: Rickards, Fajen, Sullivan, & Gillespsie, 1997; Titsworth, 2001). The more the information learning process involves understanding and transformation operations, the greater the intensity and effectiveness of the learning process. Thus, it is better to highlight notes than to simply read them, and better again to summarize them (re-write them) than highlight them (Kiewra, Benton, Kim, Risch, & Christensen, 1995).

In all of the situations that have been studied, the way notes are taken is of the utmost importance. A matrix structure for recording information has

proved to be more beneficial than an outline structure, which is in turn more beneficial than the linear structure used by most students (see also Piolat, in press; Robinson, Katayama, DuBois, & DeVaney, 1998; Ruhl & Suritky, 1995; Smith & Tompkins, 1998). The highly favorable impact of a matrix structure is similar to that obtained by the production of a keyword tree diagram (also called a conceptual map: Gruneberg & Mathieson, 1997) during note taking (Dye, 2000; Titsworth & Kiewra, 2004). The reworking of notes in order to reinforce the structuring of knowledge also has an important effect on their effectiveness as a learning tool. The high degree of concentration needed for taking notes is another factor in explaining these results. Taking notes requires the attention to be more precisely focused on the access, sorting, and coding of the information than it would be when simply listening to a speaker or reading a document (Piolat, Olive, & Kellogg, 2004). Comments made by students have often referred to the fact that taking notes helps them remain attentive (van Metter *et al.* 1994). If the note-taker is not satisfied with simply understanding what is heard or read in an automatic and relatively shallow way, then, through the understanding process, existing knowledge is combined with the new information that is being received. The implication of these attentional resources is even greater when a method based on the selection of ideas is being used and when the information is laid out spatially across the page. A strategic control is thereby exercised over the whole of the understanding activity. In other words, by spatially organizing the information on the page, the conceptual links between the pieces of information presented during the lesson or in the book are increased. Note-takers will then make stronger connections between the information being received and that already stored in their long-term memory. This way of processing information is known as "the generation effect" (Foos, Mora, & Tkacz, 1994). Furthermore, a later review of the notes, whether or not it is associated with a re-organization of the information, reinforces the integration of the knowledge and its storage in the long-term memory. This learning has a positive effect, both on scores in knowledge tests and on the composition of essays using the knowledge previously noted (Slotte & Lonka, 2001).

The carrying out of intellectually complex tasks, such as solving of problems and reasoning, can also involve the use of notes as a form of external memory. Notes allow interim pieces of information to be "stabilized" for use at a later stage in the task, thereby easing the load on the working memory. This was investigated by Cary and Carlson (1999) using an experiment that required students to calculate the remuneration of salespeople (their fixed salary plus percentage of sales). In order to bring situational constraints into play, useful information such as hourly rates of pay, tables of hours worked, and sales figures were not simultaneously made available and therefore needed to be memorized. Some of the students were allowed to note this information on

a sheet of paper while they made the calculations and others were not. Cary and Carlson found that easing the load on the working memory through taking notes led to more correct results being produced, but, more significantly, the students who took notes developed more effective and more stable methods for working out the solutions. In another study (Cary & Carlson, 2001), students were asked to carry out a series of arithmetic calculations, with some partial results being useful for later calculations. Again, some of the students were allowed to take notes and others were not. Among all the phenomena observed, two results deserve to be highlighted. Firstly, at certain moments in the calculation of the solutions, taking notes turned out to be disadvantageous, so even those students who were authorized to take notes tended to rely upon internal memorization of the intermediary results. At each stage of the task, the students juggled between taking notes and internal memorization in order to obtain the best cost/benefit ratio. Secondly, the spatial formatting of notes was seen to facilitate the production of solutions, as such formats allow useful information to be presented more clearly than formatting methods that closely follow standard linear textual forms.

4. How can note taking be taught?

The functional complexity of note taking is such that at least three skills need to be taught: comprehension through note taking, producing notes, and the conscious management of the activity as a whole (Stahl, King & Henk, 1991).

Comprehension through note taking

Very little work has been done on learning conditions and measuring the evolution of the knowledge and skills used in note taking, whether for school or university students.

At the school level, some exercises that focus on specialist psycholinguistic treatments may be done, but comprehension is most commonly taught through the production of summaries (Vigner, 1991). Producing a summary involves sorting, selecting and combining the information contained in a text with a standardized language format (respecting spelling, syntax, linearity of the text). A student who masters the art of summarizing will be able to take notes in the form of "data sheets," but summarizing is a difficult comprehension exercise to master, even for adults. Friend (2001) clearly showed that learning to extract information from a text, and then to sort it and classify it into a hierarchy is beneficial for first-year university students taking remedial courses to improve their ability to create texts. The effectiveness of this type of training is further enhanced by the fact that it also involves combining and generalizing the important pieces of information that have been extracted from a text.

Producing notes

Analyzing a corpus of notes taken by students presents the same problems as analyzing rough drafts of documents: the notes produced by students having attended the same lesson or having read the same book will be extremely varied (Hadwin, Kirby, & Woodhouse, 1999). When taking notes, students no longer follow the same conventions as for the production of standard text; spelling, syntax, and the layout of information on the page are subject to significant changes.

This variability has consequences on the nature of the training that students should be offered. All students would benefit from making certain operations automatic. Analyses of corpora show that, within one lesson, students sometimes use several different representations for the same word showing that they are unsure about which representation to choose (Barbier, Faraco, Piolat, & Branca, 2004; Branca-Rosoff, 1998). Moreover, the application of a condensing procedure also has consequences: once finalized, abbreviations should be understandable and unambiguous, as the linguistic context of the abbreviated word cannot always be used to reconstruct their meaning.

Learning how to take notes from a spoken presentation, in terms of automating calligraphic, spelling, and syntactical processes, is a slow and gradual process (Bourdin, 2002). This is undoubtedly one reason why there is very little teaching of note taking skills at the pre-university level. Teachers in secondary schools are faced with teaching objectives that are not really compatible. Teaching how to condense information through the use of abbreviations leads to clashes at two levels: (a) between teaching correct spelling, which is never completely successful, and abbreviation techniques that alter words; (b) between the syntactical organization of ideas and the telegraphic style. It is undoubtedly for these reasons that some studies have placed the emphasis on the use of note taking methods, such as tables, diagrams, and concept mapping, that are largely based on the use of key words: spellings are not changed, and the notes are unfettered by syntax.

An examination of the physical layout of notes once again raises the question of the prevalence of linear formatting when pupils learn about textuality. Thus, when asked to study a large document and extract information that can be used to formulate an argument at a later time, students sometimes juxtapose ideas that they have found in completely different parts of the document (Piolat, Gérouit & Roussey, 2002-2003). It's as if the words could automatically form a text. Skipping lines, leaving spaces, and using separators are all part of teaching note taking (Garcia-Debanc, 1990).

Another way to consider note taking, in direct relation with the principles upheld by Writing Across the Curriculum, is to conceive of it as a tool for rewriting. An experiment carried out among French teenagers (Besson-

nat, 2000) has shown that, by giving notes taken during classes the status of *starting point* and no longer that of *arrival point* of the writing activity, the high school students put more meaning into this activity, which can sometimes seem useless to them. The students were instructed to use a written synthesis to explain to one of their newly arrived classmates a point that had been the subject of a class during which the students had to take notes, in this case, the functioning of French spelling. The teacher additionally provided them a written document on the same subject that the students were allowed to keep for only one hour, during which they could take notes at will.

Some of these notes were then enlarged and shown in the class. Comparison and reflection work was then done collectively, through questioning about the various aspects of note taking, including finalization, constraints related to rephrasing a source document, span of the segment taken down in notes, and faithfulness of the information compared to the source document. The students then worked in pairs to rewrite a passage of their note taking and compared their text with that of another pair that had been assigned the same passage. This dual task made it possible to better define the difficulties related to this activity and thereby to clarify where the stumbling blocks were.

The students listed four major difficulties as well as the pedagogical orientations making it possible to deal with them:

- the slowness of the graphomotricity (how to speed it up)
- the pregnance of the linearity (how to schematize)
- the fascination of the source document (how to reword)
- the juxtaposition of information (how to sort it out).

Each of these lines of work was then subject to special training in which the students willingly participated, insofar as it was they who had drawn them out. We believe the interest of this type of approach lies in the fact that it makes visible, from a pedagogical point of view, the two major functions that are an integral part of note taking: writing to learn and learning to write. In our opinion, any approach regarding note taking truly takes on meaning only if it very explicitly incorporates this dual function that characterizes this special kind of writing and gives it its full pedagogical value.

The conscious management of the activity as a whole

The complexity of the cognitive operations and the knowledge involved in a process such as note taking require note-takers to actively control what they are doing and to master the way they work. This metacognitive knowledge allows them to plan their activity, to evaluate it and regulate it (Rémond, 2003).

Romainville & Noël (2003; Noël, Romainville & Wolfs, 1996) apply this metacognitive approach to note taking to help students overcome the numerous difficulties that they have at the beginning of their university studies. Their approach places students in a situation that is meaningful for them, where they can use their notes to prepare a summary of a lecture. At the end of the task, they help the students to deploy a metacognitive conceptualization by filling in a questionnaire (see box 1), the answers to which are analyzed in pairs.

Box 1: Metacognitive questionnaire on note taking for students (adapted from Romainville & Noël, 2003).

Part 1: Your note taking during the talk
1. Give a detailed description of how you took your notes during this talk. Give reasons, saying why you did what you did.
2. Are you satisfied with your notes? Why?
3. Compare your notes with those of a school student, shown on the colored sheet. In your opinion, which is better? Why?

Part 2: Possible improvements ...
4. If you had to start taking these notes again, what would you change? Why?
5. What advice would you give to the student, an extract from whose notes is given on the colored sheet, to help improve his/her note taking?
6. What could the speaker have done to help you with your note taking?

Part 3: Your general note taking techniques ...
7. Explain the purpose of note taking. What are its functions?
8. Do you always take notes in the same way in all of your lessons? Why?
9. How do you use the notes you take during your lessons? Do you use them as they are? If not, what do you do with them between the lesson and the exam?

These exchanges should be combined with systematic practice of a certain number of micro-skills, the lack of which was highlighted by the questionnaire and its analysis.

During work sessions, as well as through the fact that the tenants and end-results of this practice are collectively analyzed, the need to practice other micro-skills is demonstrated and addressed (see Box 2). Quality criteria for the students' notes are also revealed. Finally, the students are trained to transfer what they have learned to new situations.

Box 2: Examples of micro-skills that may form part of note taking training for students (adapted from Romainville & Noël, 2003).
Raising awareness of the subsequent use of the notes:
- starting from key words, reconstruct an oral presentation that is faithful to the original
- as above, but in several groups: compare what the different groups produce
- ask for a plan to be drawn up based on the notes
- answer questions using information from the notes
- highlight the linking words first in a text, and then in a presentation; replace them by signs

Structuring your note taking
- format a page of unbroken text
- go from one language to another (text/diagram/histogram/line graph)

Introduction to reformulation
- annotate a document in the margin (distinction between text and commentary)
- ask for notes to be taken from several points of view and compare them

Introduction to selecting information
- eliminate redundancies: same information repeated in different forms, obligatory conditions, expected consequences, structural redundancies
- eliminate certain examples: anecdotes and examples that illustrate the same rule
- put a title to each paragraph of text

Conclusion

The role of cognitive psychology in the understanding and production of texts is to analyze not only the result of these activities (what has been understood or produced), but also the activity itself (the mental operations and knowledge involved in understanding and writing). To date, note taking has not been widely studied because of its functional complexity and the need to develop methods in order to carry out such studies (Piolat, Olive & Kellogg, 2005). This functional complexity also accounts for the lack of specific note taking training in schools and universities. Teaching is limited to the production of summary texts involving the sorting, ranking, and reformulation of what the student has read or heard. Faced with the need to take notes, students develop their own methods and thereby become aware of the consequences and contradictions in their choices (Boch, 2001).

Learning to take notes well undoubtedly takes as much time as learning to write in a relatively experienced way (at least fifteen years according to Scardamalia & Bereiter, 1991). Taking into account the different functional

aspects of note taking that have been mentioned, we believe learning to take notes involves the development of a range of skills that take several years to master. The aim of teaching note taking would be to help students progress not more quickly but in a way that their skills in using this indispensable tool are improved.

Reference Points for Action

Faced with the complexity of the note taking action, teaching could focus on at least three aspects.

- In learning how to take notes, note-takers must develop their comprehension abilities within the framework of this particular activity;
- Learning to produce a formatted writing style, the semiotic characters of which are not those of canonical text formatting;
- Developing note-takers' self-awareness of how they function, in order to improve their control over these functions.

Practice simulations such as the ones discussed in this article help meet these needs.

References

Barbier, M. L., Faraco, M., Piolat, A., & Branca, S. (2004). Prise de notes et procédés de condensation en français L2 par des étudiants anglais, espagnols et japonais [Note-taking and abbreviative procedures in L2 by English, Spanish and Japanese students]. In N. Andrieux-Reix, S. Branca, & C. Puech (Eds.). *Ecriture abrégées (notes, notules, messages, codes...). L'abréviation entre pratiques spontanées, codifications, modernité et histoire* [Abbreviative procedures: daily activities and historic perspective] (pp. 143-161). Gap: Editions Orphys.

Bessonnat, D. (2000). Une année de réécriture en troisième [A Year of Rewriting at Secondary School], *Pratiques*, 105-106, 83-111.

Boch, F. (1999). *Pratiques d'écriture et de réécriture à l'université. La prise de notes, entre texte source et texte cible* [Writing and Rewriting at University. Example of Note Taking]. Paris : Presses Universitaires du Septentrion.

Boch, F. (2001). Prise de notes et écriture conceptuelle à l'université [Note Taking as Writing to Learn at University], *Pratiques*, 105/106, 137-159.

Bourdin, B. (2002). Apprentissage de la gestion de la production et contraintes de capacité [Monitoring learning of writing and capacity constrains]. In M. Fayol (Ed.), *Production du langage* [Language production] (pp. 149-169). Paris : Hermès Science Publications.

Branca-Rosoff, S. (1998). Abréviations et icônes dans les prises de notes des étudiants. [Abbreviations and icons in note taking by students] In M. Bilger, K. dan den Eynde & F. Gadet (Eds.) *Analyse linguistique et approches de l'oral. Recueil d'études offert en hommage à Claire-Blanche-Benveniste* [Speech analysis. Festschrift to Claire Blanche-Benveniste] (pp. 286-299).

Leuven-Paris: Peeters.

Branca-Rosoff, S., & Doggen, J. (2003). Le rôle des indices déclencheurs et inhibiteurs dans les prises de notes des étudiants. Quelques contrastes entre scripteurs 'français' et 'étrangers' [Note-taking inhibitory and releasing cues by L1 and L2 students]. *Arob@se,* 1-2, 152-166 [http://www.arobase.to].

Cary, M., & Carlson, R.A. (1999). External support and the development of problem-solving routines. *Journal of Experimental Psychology: Learning, Memory, and Cognition,* 25(4), 1053-1070.

Cary, M. & Carlson, R. A. (2001). Distributing working memory resources during problem solving. *Journal of Experimental Psychology: Learning, Memory, and Cognition,* 27, 836-848.

Dye, G. A. (2000). Graphic Organizers to the Rescue! Helping Students Link—and Remember—Information. *Teaching Exceptional Children*, 32(3), 72-76.

Foos, P. W., Mora, J. J., & Tkacz, S. (1994). Student study techniques and the generation effect. *Journal of Educational Psychology*, 86(4), 567-576.

Garcia-Debanc, C. (1990). Proposition pour une initiation méthodique à la prise de notes [Technique for learning note-taking]. In *L'élève et la production d'écrits* [The writing of pupils], 93-138. Metz : Centre d'analyse syntaxique de l'Université.

Gruneberg, M. M., & Mathieson, M. (1997). The perceived value of minds maps (spider diagrams) as learning and memory aids. *Cognitive Technology*, 2(1), 21-24.

Hadwin, A. F., Kirby, J. R., & Woodhouse, R. A. (1999). Individual differences in note-taking, summarization and learning from lectures. *Alberta Journal of Educational Research*, 45(1), 1-17.

Hartley, J. (2002). Note taking in non academic settings: a review. *Applied Cognitive Psychology,* 16, 559-574.

Kiewra, K. A. (1987). Note taking and review: The research and its implications. *Journal of Instructional Science,* 16, 233-249.

Kiewra, K. A., Benton, S. L., Kim, S., & Risch, N., & Christensen, M. (1995). Effects of note-taking format and study technique on recall and relational performance. *Contemporary Educational Psychology*, 20, 172-187.

Noël B., Romainville, M., & Wolfs, J.-L. (1996). La prise de notes à l'université : une approche métacognitive [Note-taking at the university: metacognitive approach]. *Éduquer et former*, 5-6, 47-58.

Piolat, A. (2001). *La prise de notes* [Note Taking]. Paris : Presses Universitaires de France.

Piolat, A. (in press). Effects of note taking technique and working-memory span on cognitive effort. In G. Rijlaarsdam (Series Ed.), *Studies in Writing*, & D. Galbraith, M. Torrance, & L. van Waes (Vol. Eds.), *Recent developments in writing process research (Vol.1 : Basic processes and word-level effects).* Dordrecht: Kluwer Academic Publishers.

Piolat, A., & Boch, F. (2004). Apprendre en notant et apprendre à noter. In E. Gentaz & P. Dessus [Learning by taking notes and learning to take notes] (Eds.), *Comprendre les apprentissages. Psychologie cognitive et éducation* [Understanding learning. Cognitive psychology and education] (pp. 133-

152) Paris : Dunod.

Piolat, A., Olive, T., & Kellogg R.T. (2004). Cognitive effort of note taking. *Applied Cognitive Psychology*, 18, 1-22.

Piolat, A., Roussey, J.Y., & Gérouit, C. (2002-2003). Prise de notes par des élèves de 10-12 ans plus ou moins bons lecteurs et rédacteurs [Note-taking by 10-12-year-old children. Effect of the writing and reading level]. *Repères,* 26, 277-291.

Rémond, M. (2003). Enseigner la compréhension : les entraînements métacogntifs. In D. Gaonac'h & M. Fayol (Eds.), *Aider les élèves à comprendre. Du Texte au multimédia* (pp. 205-232). Paris : Hachette.

Rickards, J. P., Fajen, B. R., Sullivan, J. F., & Gillespie, G. (1997). Signaling, Note-taking, and field independence-dependence in text comprehension and recall. *Journal of Educational Psychology,* 89, 508-517.

Robinson, D. H., Katayama, A. D. DuBois, N. F., & DeVaney, T. (1998). Interactive effects of graphic organizers and delayed review in concept acquisition. *The Journal of Experimental Education,* 67, 17-31.

Romainville, M., & Noël, B. (2003). Métacognition et apprentissage de la prise de notes à l'université [Metacognition and note-taking learning at the university]. *Arob@se, 1-2*, 87-96. [http://www.arobase.to]

Sanchez, R. P., Lorch, E. P., & Lorch, R. F. (2001). Effects of headings on text processing strategies. *Contemporary Educational Psychology,* 26(3), 418-428.

Scardamalia, M., & Bereiter, C. (1991). Literate expertise. In K.A. Ericsson & J. Smith, *Toward a general theory of expertise* (pp. 172-194). Cambridge: University Press

Slotte, V., & Lonka, K (2001). Note taking and essay writing. In G. Rijlaarsdam (Series Ed.) & P. Tynjälä, L. Mason & K. Lonka (volume Eds.), *Studies in Writing, vol. 7, Writing as a learning tool: Integrating Theory and Practice* (pp. 131-141).). Dordrecht: Kluwer Academic Publishers.

Stahl, N. A., King, J. R., & Henk, W.A. (1991). Enhancing students' note taking through training and evaluation. *Journal of Reading,* 34(8), 614-622.

Titsworth, B. S. (2001). The effects of teacher immediacy, use of organizational lecture cues, and students' note taking on cognitive learning. *Communication Education,* 50(4), 283-297.

Titsworth, B. S., & Kiewra, K. (2004). Organizational lecture cues and notetaking facilitate student information processing. *Contemporary Educational Psychology,* 29, 447-461.

Van Meter, P. Yokoi, L., & Pressley, M. (1994). College students' theory of note taking derived from their perceptions of note-taking. *Journal of Educational Psychology,* 86, 323-338.