



**The Canadian Association of
Second Language Teachers**

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Language Review**



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LINKING SECOND LANGUAGES RESEARCH AND PRACTICE SERIES

In this Issue:

"Une approche littératiée : apprendre les sciences et la langue en immersion tardive. Revue Canadienne des Langues Vivantes"

Research Study by Marianne Cormier et Miles Turnbull*

Comparing the evolution of language skills and scientific knowledge in two groups of students, one through a literacy approach and the other with the typical district-recommended approach

(*) Cormier, M., et Turnbull, M. (2009). Une approche littératiée : apprendre les sciences et la langue en immersion tardive. *Revue Canadienne des Langues Vivantes*, 65, 817-840.

Reflect - What experiences do I bring to reading the research?

1. How do I teach content through a second language?
2. How do I teach the second language through content?
3. What role does literacy play in my teaching of subjects other than languages?
4. How do I equip my students to understand difficult texts (listening and reading)?
5. What role does my students' first language have in my class?

What experience do the researchers bring to conducting the research?

Introducing Marianne Cormier and Miles Turnbull

Marianne Cormier has taught core French and immersion in British Columbia where she also served as an area coordinator. She has a Masters and PhD from the University of Moncton where she is now an associate professor in their Faculty of Education. Among other areas, her research interests include education in language minority settings, integration of language and content, and reading comprehension.

Miles Turnbull has taught in core and immersion programs in three Canadian provinces. He is also co-author and author of numerous classroom resources as well as

academic books and journals. At present, Miles is full professor in the Faculty of Education at the University of Prince Edward Island and editor in chief of the Canadian Journal of Applied Linguistics. He is also past president of the Canadian Association of Second Language Teachers.

A conversation with researchers Marianne Cormier and Miles Turnbull, authors of « *Une approche littéraire : apprendre les sciences et la langue en immersion tardive* »

Where did you conduct your research? With whom?

We conducted this study in two grade 7 late French immersion science classes in the same school in a mid-sized urban center. The school was located in a middle class neighbourhood. Students in both classes were exposed to the

same team of teachers for all of their immersion classes. All students came from Anglophone families and none had travelled to or lived in a francophone centre. The literacy approach group (experimental group) included 25 students (10 girls, 15 boys) and the traditional approach group (control group) included 24 students (11 girls, 14 boys).

A conversation with researchers Marianne Cormier and Miles Turnbull, authors of « *Une approche littératiée : apprendre les sciences et la langue en immersion tardive* »

What were you trying to find out?

In this study, we compared how both groups of students' language skills in French and their science knowledge developed. We implemented a unit related to volcanoes and earthquakes in both classes using two different pedagogical approaches. In the experimental group, we used what we called a Literacy approach. In the control group we used the typical district-recommended approach. Our article describes each of these approaches in detail – from a theoretical and practical point of view. The teaching in both classes was done by the same instructor (a graduate student) to control for teacher effect.

How did you gather your information?

Before and after the intervention (the teaching unit), students completed a written survey and participated in an oral interview. Both written and oral tasks allowed us to assess the students' knowledge of volcanoes and earthquakes and their skills in French. The instructor also kept a diary to note exactly what she did in each class to ensure that she was respecting the prescribed teaching approach and to note if she treated students in either group differently. She also noted her observations of students' reactions to each teaching approach. The regular classroom teacher also observed the instructor in action throughout the unit.

What did you do with the data?

We created rubrics (validated by a geological specialist) to assess the students' scientific knowledge. The learning outcomes from the science curriculum and typical scientific

knowledge served as a basis for creating these rubrics. Students' knowledge was considered even if they chose to draw or use English to communicate this knowledge. Two individuals assessed the students' work independently and conferred to agree on a score.

To assess the French skills, we did several analyses that focussed on what we know about typical difficulties for French immersion students when they speak and write in the target language. For example, we examined text length by counting the number of words in their written texts. We also counted the number of French and English words in their written and oral texts. We assessed spelling, grammatical and vocabulary errors. We also examined the richness (breadth and depth) of the vocabulary and the variety and accuracy of the verbs they used and conjugated.

We did sophisticated statistical analyses using a software package called SPSS. These analyses allowed us to compare the results from before and after the teaching unit and between groups as well.

How would you summarize what you found?

Our results show that the students who experienced the literacy approach did better in many ways on the different assessment measures used in our study. The students from the literacy approach wrote longer texts in French and even though they wrote more in French their texts contained relatively fewer errors. This group of students also made more significant gains in their knowledge of earthquakes. There were no differences between groups on the knowledge of volcanoes (both groups were quite strong at the beginning of the study).

What practical messages come from this study?

1. Integrating language and content does make a difference.

Teaching content like science without focussing on language is not efficient and students do not maximize their practice in French. Teachers can plan content units, such as the one on volcanoes and earthquakes that we describe in this article, to reach both language and content outcomes.

2. It is important to read, speak and write about science. Listen to and view scientific texts as well.

Students are capable of reading, speaking and writing about science. It is also important to engage students in listening to and viewing a variety of science texts related to the content under study. The more they read, speak, write, listen and view, the better their French skills become and they reach the content (e.g., science) outcomes at the same time.

3. Teaching students literacy strategies helps.

Reading, speaking and writing about science is not easy at beginning stages of French immersion. Listening to and viewing real texts

in French about science is also challenging. Teaching students explicit comprehension strategies before, during and after these tasks is necessary to help students succeed.

4. Some English or L1 may be necessary

While completing tasks when content is challenging and exceeds students' French skills, some English (or L1) may be a necessary scaffold for students as they navigate the cognitive and linguistics demands of reading, speaking and writing about science. Provided students are exposed to lots of French, and provided they are working on tasks to be completed in French, it is useful for them to use a limited amount of L1.

What next?

1. How can I judge if my approach is best for student success?
2. How can I teach language-learning strategies with a view to scaffold my students' comprehension of text?
3. How do I establish limits on the use of English in my class?

Additional Research Articles

- Laplante, B. (2000). Apprendre en sciences, c'est apprendre à "parler sciences": des élèves de sixième année de l'immersion parlent des réactions chimiques. *Canadian Modern Language Review*, 57(2), 245-271.

This study examined Grade 6 French immersion students' talk about science. After having been explicitly taught related language functions, the students improved their abilities to talk about science using the language they were taught. Laplante suggests that proactively choosing and then teaching language structures that are required to discuss content subjects can have a positive impact in the content areas.

- Norris, S.P., et Phillips, L.M. (2003). How literacy in its fundamental sense is central to scientific literacy. *Science Education*, 87, 224-240. In this article, Norris and Phillips link knowledge in science to

literacy skills. As such, they encourage educators to focus on literacy skills in science as a means for students to not only access content, but interpret it. Norris and Phillips highlight the need for students to be able to critically examine, evaluate and connect ideas presented in science texts in order to be able to acquire scientific knowledge.

- Rivard, L.P., and Straw, S.B. (2000). The effect of talk and writing on learning science: An exploratory study. *Science Education*, 84, 566-593. Rivard and Straw compared three groups of Grade 8 French students' science test results: (a) group one could only talk to complete a task, (b) group two could only write individually, and (c) group three talked first and then wrote individually. They found that the third group retained their science knowledge over time.