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CRSNG CREAS NSERC CRYSTAL

Do Teachers in Minority Francophone Schools Use Language-Based Activities in the Science Classroom?

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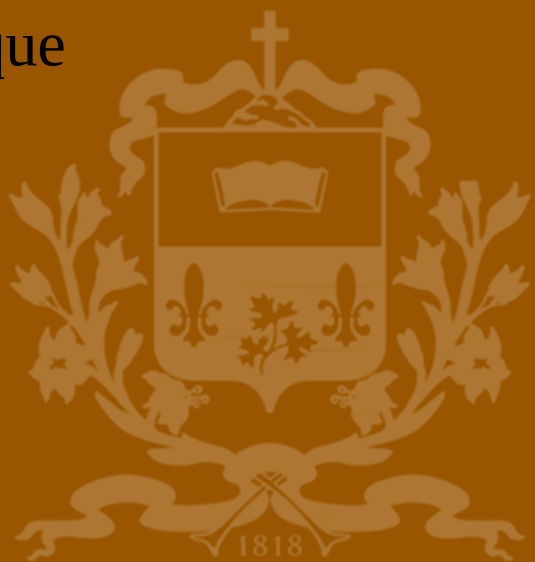

Linking Communities Project

- A five-year professional development project
- Partners include Faculty of Education (CUSB), Faculty of Science (CUSB), the Department of Education, and a school division
- All grade nine science teachers in a predominantly rural minority language school division – *Division scolaire franco-manitobaine (DSFM)*
- Goal is to enhance the teaching and learning of science

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First Languages in Canada

59.1% English
22.9% French
18.0% Other

Statistics Canada, 2002

Francophones in Canada

By region:

- 81.4% in Québec
- 4.4% in English Canada

By province:

- 33.2% in New Brunswick
- 4.2% in Manitoba
- 4.5% in Ontario
- 0.5% in Newfoundland

Four Initiatives

1. Establishing profiles of teachers in terms of risk and protective factors
2. Developing research tools for evaluating effectiveness of the PD strategy
3. Exploring technological tools for building a professional learning community
4. Supporting teaching and learning in science through various activities

Instructionally Congruent Model for Teaching Science to Minority-Language Students

Provide a rich array of discursive opportunities by:

- Expanding literacy experiences
- Using authentic materials
- Scaffolding discourse acquisition

Rivard & Cormier (In press)

Problem

To what extent do teachers in minority francophone schools use language-based activities in the science classroom?

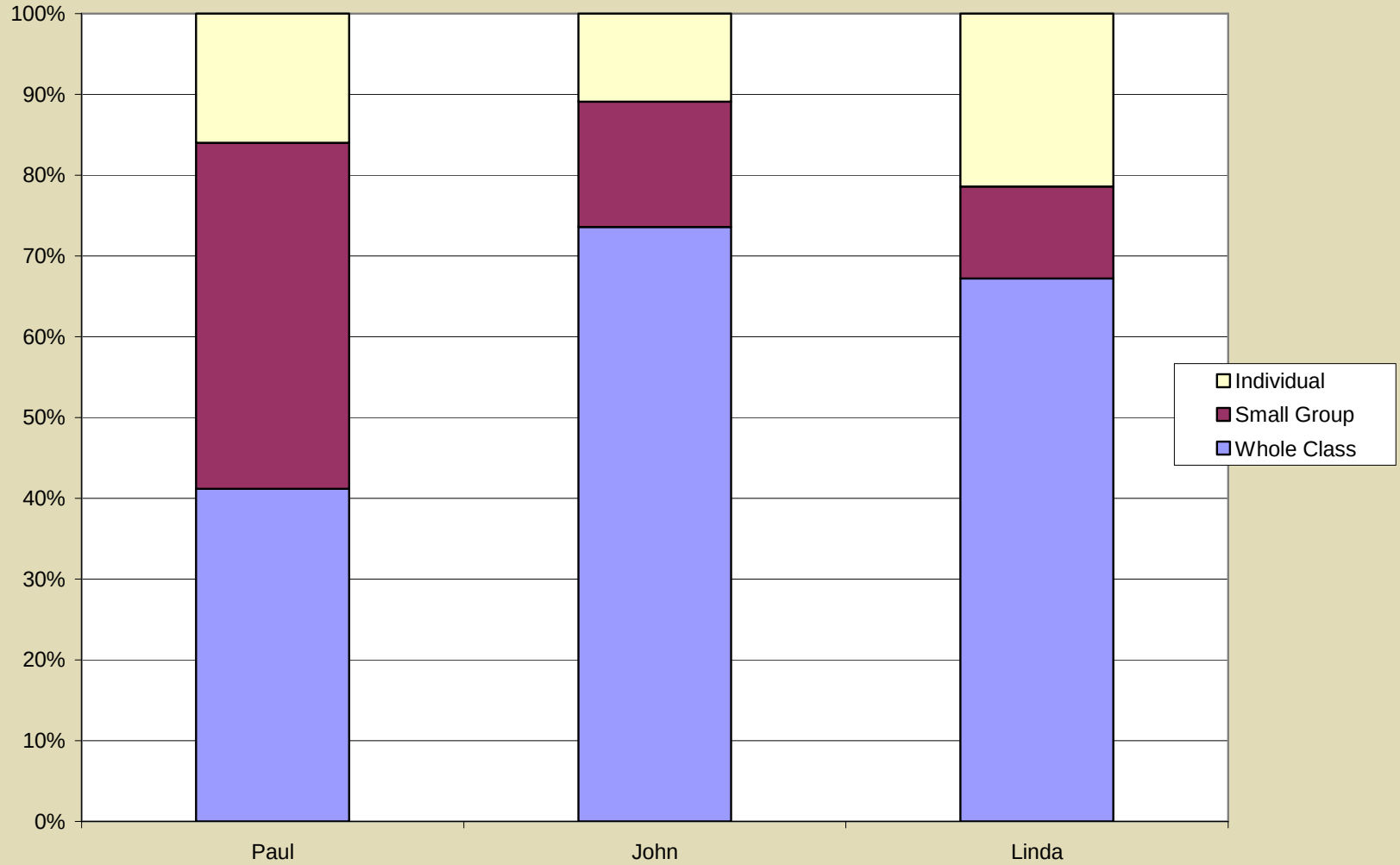
Three Case Studies of Science Teaching

- Involved over 50 hours of classroom observation
- Teachers had different profiles
- Teachers all taught the same unit for most of the study
- Involved observations of classroom organization, types of instructional events, and types of instructional materials

Teacher profiles

	Paul	**John**	**Linda**
Mother tongue	English	French	French
Science background	Yes – physics	No	No
Experience teaching secondary science	+ 13 years FL2 1st year FL1	12 years FL1	1st year FL1
School	Rural K-12 287 students	Rural K-12 346 students	Rural K-9 90 students
Class size	22	15	7
Observation period	14 x 1 hour	13 x 55 min	7 x 45-60 min

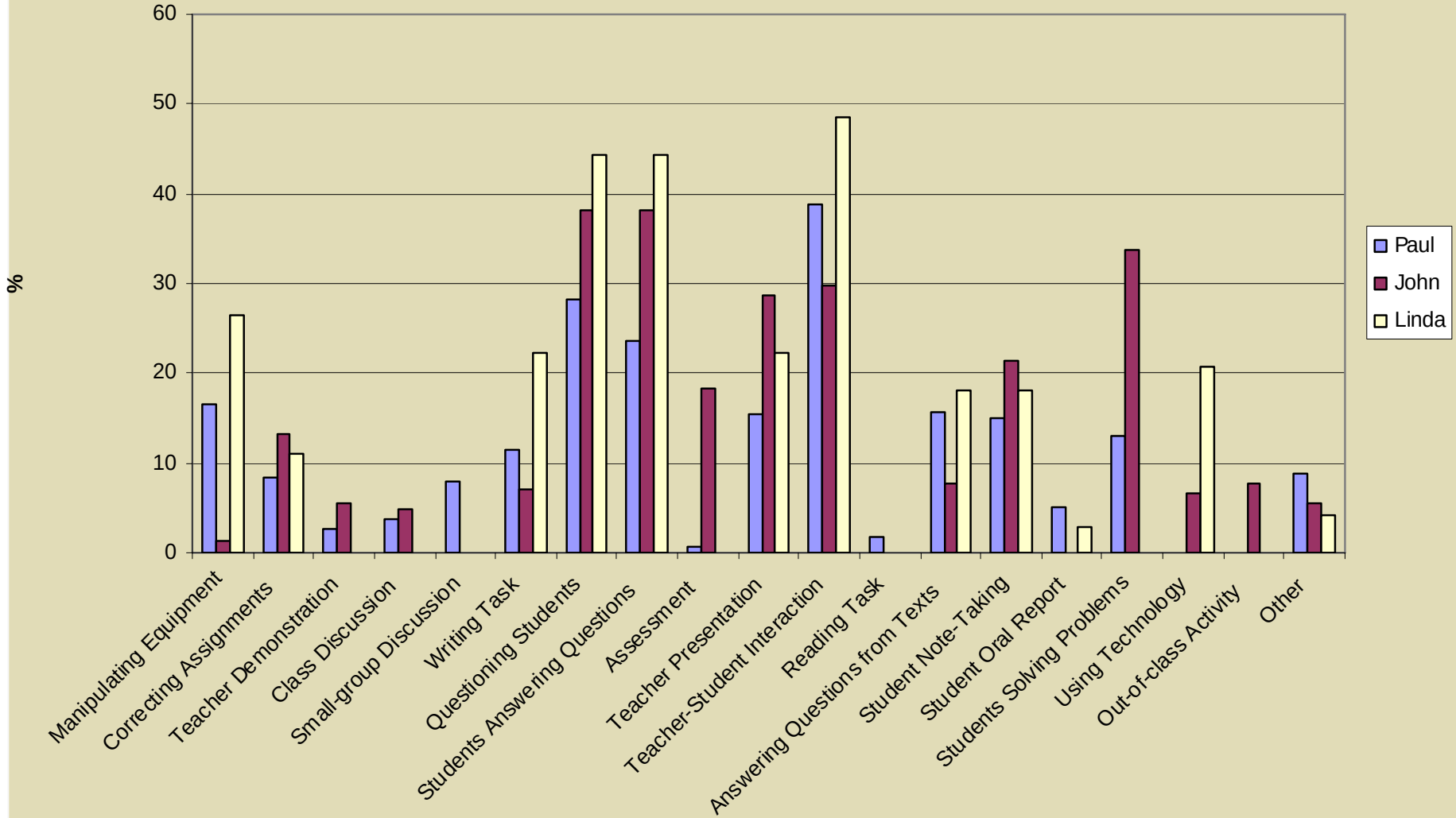
FIGURE 1: Comparison of How Three Teachers Organized Students for Instruction



Types of Instructional Activities

- Teacher Presentation
- T-S Interaction
- Reading Task
- Student Note-Taking
- Student Oral Report
- Solving Problems
- Using Technology
- Out-of-class Activity
- Assessment
- Manipulating Equipment
- Correcting Assignments
- Teacher Demonstration
- Class Discussion
- Small-group Discussion
- Writing Task
- Questioning Students
- Students Answering Questions
- Answering Questions from Texts
- Other

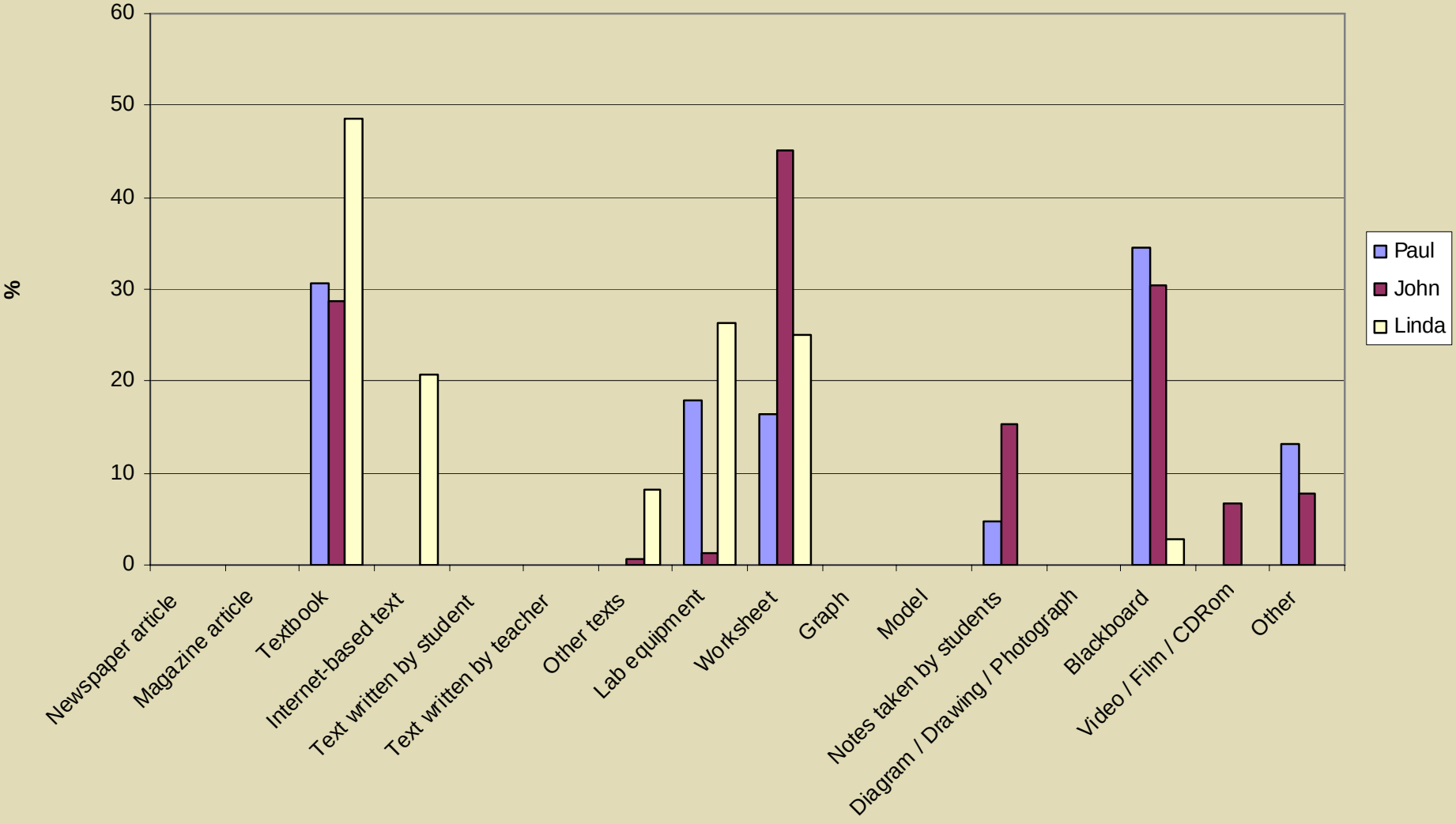
FIGURE 2: Comparison of Class Time Spent on Different Instructional Activities



Types of Instructional Materials / Support

- Lab Equipment
- Worksheet
- Graph
- Instructional Model
- Notes Written by Students
- Blackboard
- Video/Film/CDRom
- Other
- Newspaper Article
- Magazine Article
- Textbook
- Internet-Based Text
- Text Written by Student
- Text Prepared by Teacher
- Other Text
- Diagram/Drawing/Photographs

FIGURE 3: Comparison of Class Time Spent Using Various Instructional Materials



Estimated and Actual Class Time: Language-Based Activities (%)

Literacy Event	Paul		John		Linda	
	Estimate	Actual	Estimate	Actual	Estimate	Actual
READING						
Reading Task	13 combined	1.8	0	0	0	0
Answering Questions from Texts		15.7	0	7.7	5	18.1
WRITING						
Writing Task	0	11.5	0	6.9	0	22.2
Note-taking	15	15	10	21.4	5	18.1
TALKING						
Class Discussion	10	3.8	10	4.9	5	0
Small-Group Discussion	5	8	0	0	5	0
Oral Report	0	5.1	0	0	0	2.7

Estimated and Actual Class Time: Text Use

Type of Text	Paul		John		Linda	
	Estimate	Actual	Estimate	Actual	Estimate	Actual
Newspaper Article	0	0	0	0	0	0
Magazine Article	0	0	0	0	0	0
Textbook	20	30.6	10	28.7	15	48.6
Internet-based Text	0	0	0	0	10	20.8
Other Texts	0	0	10	0.8	15	8.4

Conclusions

- Reading, writing and talking are used infrequently in the classroom to support science learning.
- The textbook and the mandated curriculum dominate classroom practice.
- Teachers are receptive to using more language-based activities if provided support.
  - *More reading … apart from the textbook* (Paul)
  - *Identifying suitable texts for students to read* (John)
  - *Providing suggestions for materials (print and media) and sharing suitable websites and other resources among participants* (Paul)