

Comparing the Student Achievement and Learning Experiences of Elementary French
Immersion Students in Dual-Track and Single-Track Environments

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Overview

In elementary schools in the Halton District School Board, French instruction through a partial immersion model is offered to students in Grades 1 to 8 with early registration occurring in Grade 1 and late registration occurring in Grade 7 at Sir Ernest MacMillan Public School only. Instruction in English and French is divided evenly with students spending fifty percent of their day focusing on French Language Arts and other subjects and strands of the Ontario Elementary Curriculum in French and the remaining portion of their program in English at the same school. The HDSB has offered French immersion programming since 1978.

Across Canada, school boards have implemented a variety of models and structures to deliver French immersion programs. Halton is one of few school boards in Ontario offering partial immersion in the elementary grades. Many others use an eighty percent French and twenty percent English model in the optional French immersion programs. Typically, boards offer French immersion programming in single-track schools, dual-track schools, or multi-track schools. A single-track school houses French immersion students only. In a dual-track school, both French immersion and English-only programs are offered. Multi-track schools offer French immersion, English-only programs, and other types of immersion and/or cultural programs to students. Very few school boards in Ontario offer French immersion programming in single-track schools. Halton is the only Ontario school board using the partial immersion model in single-track schools.

Originally all schools offering French immersion in Halton were dual-track. Any school with a commitment of thirty-two students or more could initiate a French

immersion program. No special transportation was provided to allow students to attend these French “centres”. Pine Grove Public School became the first designated single-track French immersion centre in 1990. Due to accommodation constraints at Abbey Lane Public School and a prospective closure for Pine Grove Public School, Pine Grove was designated as a French immersion single-track centre and all students from the appropriate catchment area were bussed to Pine Grove. Both Linbrook Public School and Sunningdale Public School were similarly designated as single-track French immersion centres. Forest Trails Public School opened as a single-track French immersion centre in 2007.

In Halton, an immersion centre is defined as a school that serves students from its own catchment area and students who are transported from their home school. Some immersion centres have full English as well as French immersion classes (dual-track). Others have French immersion classes only (single-track). In the research literature, the term immersion centre is most often used to describe a single-track structure only (Guimont, 2003; Kissau, 1992). In 2007-08, there were 22 dual-track and 4 single-track French immersion elementary schools in Halton. In the fall of 2007, 3527 students were registered in French immersion in dual-track schools and 2295 students were registered in single-track schools. All students in the French immersion program, regardless of whether they are in dual- or single-track schools, receive instruction based on the Ontario curriculum expectations by qualified teachers using provincial and board approved resources and learning materials.

French immersion is an open access program in Halton. Given the nation-wide focus on bilingual education, and increasing demand for French immersion programming

in some communities, it is prudent to identify effective models, structures, and practices that promote French language acquisition. Considering that parents wish their children to effectively learn French, it is interesting to note that very limited research has been completed to determine which structure (dual-track and single-track), if any, produces optimal outcomes for students.

The purpose of this report is to respond to the question, *Are there differences in elementary French immersion student achievement and learning experiences in dual-track and single-track environments?* The report is divided into two sections. Section A establishes the criteria for selection of the studies from the research literature and includes a discussion of the selected studies. Section B contains analyses of relevant HDSB data pertaining to student achievement and self-report measures of school effectiveness in dual- and single-track structures.

Section A

Selection Criteria

A search of the research literature produced few results. The topic is rarely cited in the French immersion research literature. The student achievement and learning experiences of French immersion students in dual-track and single-track immersion environments have not been extensively studied and the seminal studies in this area are at least two decades old. The results are often contradictory. In referring to pedagogical and administrative issues related to the French immersion program, Parkin reported “There is little or no research evidence or official policy to help administrators decide on a suitable program for a specific school system” (Parkin, 1987, p.66). Very little has changed in the past two decades.

A total of twenty-three references were accessed. Research studies were screened using standard scientific criteria. Only three studies directly compare French immersion student achievement and/or learning experiences of students in dual- and single-track structures. The search criteria include

1. Internal Validity or Credibility

In order to establish that any differences in elementary French Immersion student achievement or learning experiences are due to the dual-track or single-track structures, systematic and scientific investigation of the phenomena must be documented. A causal relationship must be established. The research literature failed to produce any studies that establish cause and effect outcomes. For qualitative studies, credibility may be limited as the findings can only be verified by the participants.

2. External Validity or Transferability

Research findings that can be applied to other groups or contexts are said to be transferable. For quantitative studies, measures of external validity support transferability. Qualitative studies are more likely to be generalized when the researcher has thoroughly described the context and the assumptions that were central to the research.

3. Reliability or Dependability

The notion of dependability is based on the idea that the results can be replicated in similar contexts. Controlling for contextual changes in schools is especially challenging over time. It is therefore preferable that research literature be current. In education, out-of-date research studies may not accurately represent current education realities. The dependability of the findings is especially problematic for the Halton case where a partial immersion model (fifty percent French – fifty percent English program) operates. Studies based on models where students spend considerably more time immersed in French instruction, whether in dual-track or single-track environments, may produce results that cannot be replicated in Halton schools given the current partial immersion model.

4. Objectivity or Conformability

Research findings must be objective. Researcher bias is mitigated when multiple observations and/or measurements are confirmed by others. Establishing conformability is especially challenging when there is limited research on any given topic or issue. Research studies that are peer reviewed are given preference. Peer review is a process of subjecting a researcher's scholarly work or ideas to the

scrutiny of others who are experts in the same field. The majority of available studies comparing student achievement and learning experiences in dual- and single-track immersion structures have not been confirmed by the research community.

These criteria provide the filter through which research studies and articles have been assessed for inclusion in the review of the literature. Educational research used to facilitate decision-making and policy development should be scientifically-based and widely supported by the research community.

Review of the Literature

Stoll and Fink (1996) describe an effective school as one that

1. Promotes progress for all of its students beyond what would be expected given consideration of initial attainment and background factors;
2. Ensures that each pupil achieves the highest standards possible;
3. Enhances all aspects of student achievement and development; and
4. Continues to improve from year to year.

The effective school indicators include a variety of school-level, teacher-level, and student-level variables (Marzano, 2003). A commonly used measure of effectiveness is student achievement. Lapkin, Andrew, Harley, Swain & Kamin (1981) measured the academic performance of Grade 5 students in dual- and single-track French immersion schools in the Ottawa-Carleton region of Ontario. While a single-track school or centre is defined as a school where only French immersion is offered, in this study, the French immersion centres were technically dual-track schools in that they were in the process of

phasing out English-only programs and a small portion of the student population was still enrolled in the English-track program.

The results show that students in single-track French immersion classes performed statistically better than students in dual-track French immersion classes on two of four French language tests. Similar results were found for two of the subtests of the Canadian Tests of Basic Skills, vocabulary and reading. No statistical differences were found in measures of science, mathematics and work study skills. While the results of this study are often cited in articles on French immersion programming, the reliability is questionable given the many changes in instructional practices, assessment, and curriculum over the past 28 years. Lapkin (1990) cautions readers about generalizing the results of this study to other contexts. It should be noted that these results do not establish a causal link between student achievement and type of French immersion school structure but rather observe differences in some aspects of achievement for a small sample of students. Interestingly, a recent review of the literature on immersion education in Canada by Swain & Lapkin (2005) based on the core features of prototypical immersion programs (Swain & Johnson, 1997) does not mention the topic of dual- and single-track structures and the potential impact on immersion student achievement. An extensive review of the literature prepared by the Language Research Center, University of Calgary, for Alberta Education also does not include references to studies on immersion student achievement or learning experiences in dual- and single-track structures (Archibald, J., Roy, S., Harmel, S., Jasney, K., Dervey, E., Moisk, S., & Lessard, P., 2006).

Guimont (2003) studied the provincial achievement scores of all Grade 6 French immersion students in Alberta between 1995-1996 and 1999-2000 in four core subject areas taught and assessed in French. Individual student scores for French Language Arts, Mathematics, Science and Social Studies were disaggregated according to single-track and dual-track structures. Total test means and standard deviations were used to compare groups in each year and in each subject. Results of the comparisons show that students enrolled in single-track immersion centres achieved better results, or higher total test means, in all four subjects. A descriptive analysis of the data was conducted.

“Regression analysis was not warranted in this study because the results come from the entire French immersion population divided into two sub-populations. Furthermore, since the research looked at the results of the entire immersion population divided into two sub-populations, this meant that, if any difference in the Total Test Mean between the two immersion populations existed, then it would signify that they had differences in achievement on the various tests” (Guimont, 2003, p. 52).

The decision to forego a more rigorous analysis of the student achievement data is open to debate (Cronbach, L., Linn, R., Brennan, R., & Haertel, E., 1997). The statistical findings in this non-peer reviewed study should be considered cautiously. In asserting that single-track French immersion school students, on average, achieve higher test scores than students in dual-track or multi-track settings, Guimont (2003) asked the principals of five of the top ten achieving schools teaching French in Alberta to account for the differences. They hypothesized that single-track schools may function like Francophone schools where students have greater opportunities to speak French outside

of the classroom, resources are directed to support one program, and parent characteristics such as having at least one Francophone parent may influence the test scores. While acknowledging the importance of academic performance, other factors can influence a school's effectiveness.

When discussing dual-track and single-track structures, it is reasonable to ask which type of environment more effectively supports student learning of French as a second language. The principals of the high achieving schools that offer French immersion programming in Alberta, four dual-track schools and one single-track school, identified the factors that they felt contributed to each school's high student achievement. Interpretational analysis of the data led to the naming of nine key themes including

1. High quality teachers;
2. Knowledge of the curriculum;
3. Effective instructional practices;
4. Ability to communicate well in French;
5. High expectations for student achievement;
6. Collegiality of staff and equity in the programs;
7. Support for struggling students;
8. Parental involvement; and
9. Principal leadership.

The nine themes align with a well documented body of research on effective schools (Marzano, 2003; Levine & Lezott, 1995, Fink & Stoll, 1992). These themes, or correlates, are applicable to all school settings and structures and are indicators of effective schools although the ability to communicate well in French is unique to French

immersion contexts. “ French immersion effectiveness, defined in linguistic and academic outcomes, has usually excluded school organization and level of integration (defined by the cohesiveness of school culture in pursuit of common goals), teachers’ behaviours, and principals’ leadership” (Safty, 1992, p. 24). The effectiveness of French immersion programs, whether they are situated in single-track or dual-track structures, is influenced by a variety of factors. No one factor determines the efficacy of a school or program. Safty (1992) suggests that the effectiveness of French immersion programs should be assessed in part by “considering accessibility to the program, its organizational setting (especially the degree of integration with other school programs), teachers’ behaviour in bilingual classes, and the principals’ leadership role” (p.25). The author cites McGillivray (1984) and Lapkin and Swain (1984) as proponents of immersion centres due to perceived difficulties in integrating ‘two identifiable cultural groups’ of teachers (p. 27) and the potential to ‘enhance immersion students’ linguistic skills’ (p. 27). Safty (1992) does not explicitly make comparisons between dual-track and single-track environments.

Questions of integration and effectiveness become especially relevant in both dual-track and single-track school settings where the partial immersion model is offered. The school administrators and teachers, both English program and French program, must establish a cohesive and integrated environment, fostering cooperation and collaboration among staff, administration, students and the parent community, to achieve common goals. This can be challenging in both settings if administrators are unable to understand or communicate in French (Olsen & Burns, 1983).

Cummins (2000) goes beyond teacher relationships to look at the instructional practices of teachers. Differences between students' receptive and expressive French language skills may in part be due to the instructional decisions of French language teachers who have tended to adopt highly directed lessons that provide minimal opportunities for students to speak and write critically and creatively in French (Cummins, 2000). The use of effective instructional strategies by French immersion teachers, in fact all teachers, in both dual- and single-track schools, may bring about improved student achievement and teacher collegiality (Marzano, 2003). The author (Cummins, 2000) advocates that French immersion students be encouraged to use their first language to converse and collaborate with other students in the early stages of project-based work, but the finished work be in the target language. While the author goes on to state his belief that expressive language skills develop better in single-track schools, he acknowledges the importance of effective instructional strategies to impact student performance in French immersion programs.

In the study by Lapkin *et al.* (1981) the researchers set out to determine which environment, dual-track or single-track, was more conducive to achievement in French. Sixty-six teachers, forty-eight from single-track schools and eighteen from dual-track schools, completed questionnaires that asked about the school environment, the teachers themselves, and their experiences with the immersion program. It was considered inappropriate to conduct statistical comparisons of the questionnaire results and the authors cautioned that the results should not be related to any student achievement results reported in the study. The teacher participants tended to choose the single-track environment over the dual-track environment as a preferable place to teach.

Kissau (2003) looked into the relationship between school environment and effectiveness in French immersion by surveying students and teachers in single-track and dual-track schools in southwestern Ontario. The results suggest that French immersion students in single-track schools ‘perceive themselves to be exposed to more French and a more positive atmosphere than do their dual-track counterparts’ (p. 99). The study showed no significant differences between students’ use of French or student and teacher satisfaction with the program, dual-and single-track. The author recommends that further research be completed on the affective factors associated with dual- and single-track French immersion environments and that advantageous conditions be fostered and supported in all French immersion settings.

Conclusion

The purpose of the review of the literature is to compile and discuss research literature that focuses on comparing French immersion student achievement and learning experiences in two different delivery structures, dual- track and single-track schools. The question guiding the inquiry is, “*Are there differences in elementary French immersion student achievement and learning experiences in single-track and dual-track environments?*” The question is not easily answerable. At present we lack sufficient empirical evidence to respond confidently.

During the 1980s there was a surge in research on French immersion programs and the impact on student achievement, primarily reading, followed by a dormant period (Genesee & Jared, 2008). In the past ten years immersion issues have once again commanded the attention of the research community, however, the focus is not on

comparing French immersion student outcomes in terms of dual-and single-track experiences.

Scientifically based-evidence should be used to inform the educational community and guide decision-making and policy development. One of the challenges facing the educational community is the lack of research evidence to inform decision-making. In the absence of evidence, other factors must be considered. Lamarre (1990) states

“...research alone should not be considered as the answer in French immersion education, especially when major decisions have to be made. Research findings should by all means be studied, and referred to, but at the same time should serve as a guide rather than the ‘gospel truth’. Because so little is known for sure in the field of French immersion, there is a tendency in all of us to hang on to research findings as tightly as possible even though these may be subject to change”
(p.10).

Given the paucity of quality studies on this topic, it is prudent to look to board, school, and student-level data for additional information.

Section B

Statistical Procedure and Results

Educational data are often multilevel, or hierarchical in nature (e.g. students nested within schools.) (Ma & Klinger, 2000). In his 1995 text *Applied Multilevel Analysis*, J.J. Hox writes:

Pupils in the same school tend to be similar to each other, because of selection processes (e.g., some schools may attract primarily higher SES pupils, while others attract more lower SES pupils) and because of the common history they share by going to the same school. As a result, the average correlation (expressed in the so-called intra class correlation) between variables measured on pupils from the same school will be higher than the average correlation between variables measured on pupils from different schools. Standard statistical tests lean heavily on the assumption of independence of the observations. If this assumption is violated (and in multilevel data this is usually the case) the estimates of the standard errors of conventional statistical tests are much too small, and this results in many spuriously “significant results.” (p. 6)

The current investigation into differences in achievement, self-report measures of school effectiveness and attrition between students enrolled in French immersion programs at single track (ST) and dual track (DT) schools uses hierarchical linear modeling (HLM). HLM allows for analysis of multilevel data such as students nested within schools (Ma & Klinger, 2000, p. 43)

In analyses of outcome data in education, where differences are assessed across groups of students, whether they be classrooms, schools, or families of schools, it is

customary, where possible, and where it is deemed prudent, to use demographic information such as measures of socioeconomic status to control for differences in the groups that may be related to the research question, but that may bias findings. The Halton District School Board does not collect data on socioeconomic status at the student level. Although measures of socioeconomic status are accessible to the Research department in HDSB through Statistics Canada, these data are aggregated to *the school level*. Use of these data as “control” variables does not, in fact, account for the variance in the dependent variable that is attributable to the differences in students on these measures, but accounts for the variance that is attributable to the differences in schools on these measures. As hierarchical linear modeling nests students within schools, accounting for variance that is attributable to the differences in schools, no further statistical advantage is gained through modeling socioeconomic measures *at the school level* as “control” variables. It follows that, in regard to results obtained through use of statistical techniques that nest students within schools, it can be said that those results are “controlled for socioeconomic status differences,” where those differences have been measured *at the school level*. And, as has been noted previously, this is the only level at which the Research department in HDSB had access to socioeconomic status data at the time of this writing.

The Education Quality and Accountability Office administers standardized tests to all public school students in Ontario in grades three and six (Johnson, 2007). These tests represent measures of achievement vis-à-vis the Ontario Curriculum in the subjects of Reading, Writing, and Mathematics, and yield raw level scores for participating students ranging from 0.1 to 4.9. In regard to the EQAO Primary assessment,

administered to students in grade three , 2645 raw level scores in reading (M = 3.36, SD= 0.58), writing (M = 3.37, SD =0.48) and math (M= 3.43, SD = 0.52) were compiled for students enrolled in French immersion programs in HDSB during the school years 2004-05 through 2007-08. In respect of the Junior assessment, administered to students in grade six, 1927 reading (M = 3.45, SD = 0.50), writing (M =3.45, SD = 0.50) and math (M = 3.42, SD =0.53) raw level scores were assembled for students in French immersion programs in HDSB in 2004-05 through 2007-08. Students were assigned to the single track or dual track group based on the school in which they were enrolled at the time of the administration of the EQAO assessments. Using HLM, students were nested in their schools (school was modeled as a random effect), group (ST or DT) and school year (2004-05, 2005-06, 2006-07, 2007-08) were modeled as fixed main effects. Group x School Year was included in the model as an interaction. This procedure was identical for both the Primary and Junior EQAO assessment data.

Results indicated a significant ($p < .05$) Group x School Year interaction for the writing subject of the Primary assessment, $F(3, 2546) = 4.199, p = .006$. The Junior assessment data yielded significant Group x School Year interactions in reading $F(3, 1826) = 4.506, p = .004$, writing $F(3, 1661) = 4.611, p = .003$ and math $F(3, 1878) = 2.79, p = .039$. As the research question pertains to differences across the groups, Table 1 displays the results of simple main effects tests for group at each level of school year for subjects yielding significant interactions in the Primary and Junior EQAO data. Inspection of the table indicates no significant differences for any comparison of group at any level of the variable school year.

Table 1

Estimated Marginal Means and Standard Errors for EQAO Data

Measure		Single Track		Dual Track		
		M	SE	M	SE	
EQAO**						
Primary						
Writing	2004-05	3.330	.133	3.217	.065	—
	2005-06	3.489	.065	3.329	.040	—
	2006-07	3.463	.068	3.351	.039	—
	2007-08	3.379	.080	3.359	.050	—
Junior						
Reading	2004-05	3.484	.089	3.445	.045	—
	2005-06	3.417	.079	3.555	.043	—
	2006-07	3.331	.080	3.477	.044	—
	2007-08	3.434	.075	3.382	.043	—
Junior						
Writing	2004-05	3.381	.077	3.372	.039	—
	2005-06	3.481	.065	3.463	.037	—
	2006-07	3.378	.065	3.519	.037	—
	2007-08	3.556	.060	3.449	.036	—
Junior						
Math	2004-05	3.406	.111	3.394	.056	—
	2005-06	3.430	.102	3.417	.054	—
	2006-07	3.255	.102	3.417	.055	—
	2007-08	3.432	.098	3.427	.054	—

— indicates non-significant differences

** for participating students only

As a standardized French proficiency assessment is not administered in HDSB, it was deemed prudent to examine Term 3 report card marks in the subject of French as a Second Language (FSL) as an additional measure of achievement. Term 3 report card marks in English were also investigated for differences across ST and DT settings. The FSL and English subjects are comprised of three strands, Reading, Writing, and Oral and Visual Communication. Data were compiled on 15938 students attending French

immersion programs in HDSB in the years 2005-06 through 2007-08 (the same student in a different year was treated as a different case for the purposes of this analysis.)

Report card marks for students in grades one through six were converted to numeric scores using the following conversion scheme: A+ = 95, A = 87, A = 82, B+ = 78, B = 74.5, B- = 71, C+ = 68, C = 64.5, C- = 61, D+ = 58, D = 54.5, D = 51, R = missing. As the report card marks for students in grades seven and eight were already in numeric form, those numbers were retained. Six strands, FSL reading (M = 75.58, SD = 7.30), FSL writing (M = 75.11, SD = 7.44), FSL oral and visual communication (M = 75.79, SD = 6.74), English reading (M = 76.94, SD = 7.55), English writing (M = 75.11, SD = 7.03) and English oral and visual communication (M = 77.11, SD = 6.18), across two subjects, French as a second language and English, across eight grades (1 through 8) were compared to investigate differences in achievement for students attending ST and DT schools.

Collapsing report card marks across grades for the purpose of this analysis was deemed inappropriate. To avoid the modeling of the three way interaction term Group x Grade x School Year, and the possibility of yielding a number of significant results that were not germane to the present investigation, the data compiled in the three years of 2005-06 through 2007-08 were aggregated. Using HLM, group and grade were modeled as fixed main effects, Group x Grade was modeled as an interaction term and school was modeled as a random effect for three strands across the two subject areas FSL and English. Results yielded a significant interaction of Group x Grade for all six strands. Again, as the focus of the research question was on the difference between groups, Table

2 displays the results of simple main effects tests of group at each level of grade, by strand, for FSL. Table 3 displays identical comparisons for the English subject.

Table 2

Estimated Marginal Means and Standard Errors of Term 3 Report Card Marks[†] for FSL

Measure		Single Track		Dual Track		
		M	SE	M	SE	
French as a Second Language						
Strand						
Reading	Grade 1	NA		NA		
	Grade 2	74.782	.542	74.171	.347	—
	Grade 3	75.615	.562	74.684	.363	—
	Grade 4	76.288	.553	73.692	.360	*
	Grade 5	76.697	.844	74.809	.517	—
	Grade 6	77.940	1.331	75.201	.687	—
	Grade 7	77.529	.576	75.410	.294	*
	Grade 8	78.200	1.301	76.958	.581	—
Writing	Grade 1	NA		NA		
	Grade 2	73.473	.569	72.996	.368	—
	Grade 3	74.349	.634	73.405	.397	—
	Grade 4	74.777	.781	72.803	.481	—
	Grade 5	75.198	1.001	73.932	.608	—
	Grade 6	77.113	1.322	74.188	.688	—
	Grade 7	77.332	1.253	74.424	.650	—
	Grade 8	77.268	2.131	75.344	.932	—
Oral and Visual Communic'	Grade 1	75.060	.801	74.855	.481	—
	Grade 2	75.099	.476	75.206	.305	—
	Grade 3	75.887	.483	74.911	.315	—
	Grade 4	77.426	.805	73.944	.489	*
	Grade 5	77.688	1.253	75.107	.742	—
	Grade 6	79.322	1.380	75.909	.708	*
	Grade 7	78.009	1.444	75.427	.753	—
	Grade 8	78.389	1.440	77.020	.636	—

*p<.05

[†] reliabilities for report card data used in this report have not been established

Table 3

Estimated Marginal Means and Standard Errors for Term 3 Report Card Marks[†] in

English

Measure English		Single Track		Dual Track		
		M	SE	M	SE	
Strand						
Reading	Grade 1	77.764	1.113	76.531	.666	—
	Grade 2	77.413	.866	76.555	.523	—
	Grade 3	76.319	.661	75.363	.412	—
	Grade 4	76.895	.740	75.688	.453	—
	Grade 5	77.871	.838	76.670	.511	—
	Grade 6	76.509	.603	79.695	1.157	*
	Grade 7	77.711	1.097	76.669	.569	—
	Grade 8	78.654	1.342	78.026	.599	—
Writing	Grade 1	73.701	.635	72.574	.387	—
	Grade 2	74.220	.959	73.044	.572	—
	Grade 3	74.988	.472	73.759	.309	—
	Grade 4	75.550	.568	74.249	.362	—
	Grade 5	76.744	.798	75.598	.490	—
	Grade 6	78.713	1.397	75.902	.719	—
	Grade 7	78.196	1.030	76.766	.534	—
	Grade 8	78.889	1.341	77.896	.598	—
Oral and Visual Communic'	Grade 1	75.693	.469	74.898	.291	—
	Grade 2	76.534	.475	75.95	.295	—
	Grade 3	76.879	.606	75.674	.373	—
	Grade 4	77.511	.807	76.066	.487	—
	Grade 5	79.388	.833	77.959	.505	—
	Grade 6	80.459	1.113	78.201	.579	—
	Grade 7	79.754	.948	78.012	.492	—
	Grade 8	79.235	1.622	79.200	.712	—

*p<.05

[†] reliabilities for report card data used in this report have not been established

Observation of Table 2 denotes four significant differences for FSL: reading in grade 4, $F(1, 11) = 15.48, p=.003$, oral and visual communication in Grade 4, $F(1, 11) =$

13.67, $p = .003$, oral and visual communication in Grade 6, $F(1,12) = 4.84$, $p = .049$, and reading in Grade 7, $F(1, 8) = 10.74$, $p = .011$. These significant differences were in the direction of higher report card marks for students in single track schools. Inspection of Table 3 yields a single significant result in English, that of reading, $F(1,12) = 5.963$, $p = .031$. Again, this finding indicates higher marks for students in ST. It should be noted that reliabilities for report card data used in this report have not been established.

Annually in HDSB, students in grades four through eight, and parents/guardians of all children enrolled in HDSB schools are invited to participate in the School Effectiveness Survey (SES), a self-report measure of school effectiveness. The elementary student version of the SES contains 40 items, utilizing a five point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The elementary parent version contains 42 items using the identical Likert scale. Four years (2004-05 through 2007-08) of elementary school effectiveness survey data at the student level was compiled for students attending single track and dual track French immersion schools. Three years of parent SES survey data (2005-06 through 2007-08) at the elemental level for parents/guardians of children attending single track and dual track French immersion schools was also amassed. Hox (1995) writes:

The problem of dependencies between individual observations also occurs in survey research, when the sample is not taken at random, but cluster sampling from geographical regions is used instead. ...respondents from the same geographical area will be more similar to each other than respondents from different geographical regions. The result is again estimates of standard errors that are too small, and spurious significant results (p. 6)

To assess for possible differences in self-report measures of school effectiveness of students from ST and DT schools, and in the responses of the parents/guardians of these students, select domains of the respective versions of the SES, student and parent, were identified as appropriate to the research question. Item responses from these domains were summed, producing domain scores for students and parents/guardians that were used as dependent measures. With respect to the elementary student version of the SES, three domains were identified: Belonging, Communication and Community, and Culture and Climate. The Belonging component ($M = 23.9$, $SD = 5.4$) contained the following items.

Table 4

Belonging Domain of the Elementary Student Version of the SES

Items:
I feel awkward and out of place.
I feel like an outsider.
I feel like I belong.
I feel lonely.
I make friends easily.
Other students seem to like me.

Cronbach's alpha, a measure of internal consistency, for the Belonging domain was 0.85.

Table 5 contains items comprising the Communication and Community domain ($M = 31.6$, $SD = 7.7$). Cronbach's alpha for this component was 0.88.

Table 5

Communication and Community Domain of the Elementary Student Version of the SES

Items:	
I feel safe at this school.	I can talk to the Principal or Vice-Principal when I need to.
Students get to help make some decisions about school rules and student activities.	Discipline problems are handled fairly.
Staff and students work together to solve problems.	I feel proud of this school.
The school does a good job helping parents to understand what I am learning.	Most teachers are interested in students well being.
Most of my teachers really listen to what I have to say.	

Table 6 lists the items that constitute the Culture and Climate domain (M=23.9, SD=5.4).

This component yielded an alpha of 0.76.

Table 6

Culture and Climate Domain of the Elementary Student Version of the SES

Items:	
Most teachers believe I can learn and be successful.	I often feel bored.
The school is clean and tidy.	Parents and community members help out in the school.
Most of my teachers treat me fairly.	The community participates in school events.
I participate in school-based activities that help others in the community.	Students get along with most teachers.

Domains of the elementary parent version of the SES identified for inclusion in this investigation were Classroom Learning (M = 57.8, SD = 9.8), Parent and School Connectedness (M = 44.6, SD = 6.2) and Culture and Climate (M = 48.3, SD = 6.9)(See

Tables 7, 8, and 9). Cronbach's alpha for these three domains were 0.93, 0.84 and .90 respectively.

Table 7

Classroom Learning Domain of the Elementary Parent Version of the SES

Items:	
Parents, students and staff work together to solve problems.	The school succeeds at preparing my child for future schooling/work.
Teachers let me know when my child has done something well.	My child's teacher(s) really care about and respect the students.
Teachers provide extra help when my child needs it.	Teachers give students a variety of ways to show how well they have learned.
School activities help to develop my child's interests and abilities.	I understand how my child is assessed.
My child's teachers clearly tell me what she/he is expected to learn.	My child has homework that helps him/her learn better.
Parents have opportunities to participate in important decisions about their child's education.	Students have adequate supplies, materials and textbooks to help them learn.
Teachers let me know how well my child is doing.	Students have adequate access to the technology needed for their school work.
The information that I need about the school curriculum and my child's achievement is easily accessible.	

Table 8

Parent and School Connectedness Domain of the Elementary Parent Version of the SES

Items:	
I am treated with respect at this school.	The school welcomes and encourages parent involvement
I can talk to the Principal and/or Vice-Principal(s) when I need	I feel welcomed at this school
I am encouraged to attend school events	I can freely express my concerns to the school staff
I feel proud of this school	I take advantage of opportunities to volunteer in the school
I would recommend this school to other parents	My responsibilities make it difficult for me to attend classroom and school activities
The community participates in school events	

Table 9

Culture and Climate Domain of the Elementary Parent Version of the SES

Items:	
I believe that my child's school has high academic expectations for all students.	Most students are well behaved
The school meets the needs of its students.	People treat each other with respect
The school emphasizes student thinking and problem-solving	Discipline problems are handled appropriately
My child gets along with most of her/his teachers	My child feels safe at this school
The school emphasizes success not failure	The school is clean and well-maintained.
My child likes going to school	

Student and parent/guardian domain scores were grouped according to ST and DT schools, group was modeled as a fixed main effect, and school was modeled as a random effect (to nest students within schools and parents/guardians within their school catchment areas). Reference to Table 10 indicates a single significant difference, that of the Belonging domain of the student survey $F(1,19) = 5.53, p = .029$. This finding should be interpreted with caution as the distribution of domain scores showed considerable negative skew. A significantly higher estimated marginal mean for students in ST indicates that these students responded more positively to items pertaining to belongingness.

Table 10

Estimated Means and Standard Errors of School Effectiveness Survey Domain Scores

Measure	Single Track		Dual Track		
	M	SE	M	SE	
SE Survey					
Student					
Belonging	24.643	.374	23.661	.185	*
Communication and Community	33.715	1.424	32.048	.711	—
Culture and Climate	31.565	1.146	29.387	.572	—
Parent					—
Classroom Learning	57.931	1.553	56.502	.792	—
Parent and School Connectedness	44.921	1.266	43.908	.641	—
Culture and Climate	49.104	1.53	46.957	.773	—

* $p < .05$,

Enrollment data for students attending French immersion programs in HDSB for the years 2005-06 through 2007-08 was compiled and aggregated to investigate

differences in attrition rates for students attending ST and DT schools. Attrition here is defined as the demission, for any reason, of a student in grades one through seven from a French immersion program in HDSB, followed by subsequent readmission to a an English track program within the Board . The readmission to an English track program may occur during the school year in which the demission occurred, or at beginning of the next school year. Chi-square tests of independence were used to assess the difference in attrition rates across DT and ST schools for all grades combined (See Table 11), and for a disaggregation of the data by grade (See Table 12). Inspection of Table 11 indicates that for all grades combined the attrition rates across ST and DT groups is significantly different at the .05 level ($\chi^2=31.62$), with the rate of attrition in DT schools measuring 5.7 % compared to 3.6% in ST schools. The overall rate of attrition from French immersion programs in HDSB (ST and DT schools combined) measured 4.9%.

Table 11

Attrition Rates for All Grades Combined

					Total	
			French Immersion	English Track		
Group	dual track	Count	8164	494	8658	*
		% within group	94.3%	5.7%	100.0%	
		% of Total	57.2%	3.5%	60.7%	
	single track	Count	5413	203	5616	
		% within group	96.4%	3.6%	100.0%	
		% of Total	37.9%	1.4%	39.3%	
Total		Count	13577	697	14274	
		% within group	95.1%	4.9%	100.0%	
		% of Total	95.1%	4.9%	100.0%	

* p<.05

Table 12 yields significant differences between ST and DT groups for grades 1 ($\chi^2=22.22$), 2 ($\chi^2=16.95$), 3 ($\chi^2=14.25$) and 5 ($\chi^2=5.21$). Given the dichotomous,

categorical nature of the dependent variable, multilevel modeling was not used in analysis of attrition rates.

Table 12

Attrition Rates by Grade

Grade				French Immersion	English Track	Total	
1	group	dual track	Count	1540	131	1671	*
			% within group	92.2%	7.8%	100.0%	
		single track	Count	1287	49	1336	
			% within group	96.3%	3.7%	100.0%	
2	group	dual track	Count	1294	93	1387	*
			% within group	93.3%	6.7%	100.0%	
		single track	Count	1095	34	1129	
			% within group	95.0%	5.0%	100.0%	
3	group	dual track	Count	1122	88	1210	*
			% within group	92.7%	7.3%	100.0%	
		single track	Count	948	34	982	
			% within group	94.4%	5.6%	100.0%	
4	group	dual track	Count	1014	66	1080	
			% within group	93.9%	6.1%	100.0%	
		single track	Count	793	40	833	
			% within group	94.5%	5.5%	100.0%	
5	group	dual track	Count	900	49	949	*
			% within group	94.8%	5.2%	100.0%	
		single track	Count	697	20	717	
			% within group	97.2%	2.8%	100.0%	
6	group	dual track	Count	972	37	1009	
			% within group	96.3%	3.7%	100.0%	
		single track	Count	498	25	523	
			% within group	95.2%	4.8%	100.0%	
7	group	dual track	Count	1322	30	1352	
			% within group	97.8%	2.2%	100.0%	
		single track	Count	95	<5		
			% within group			100.0%	

*p<.05

A brief note is warranted on the number of comparisons made in this investigation and the issue of Type I error. No doubt, the probability of Type I error in the results presented in this report has increased due to the number of independent tests. However,

the issue has been reduced to a relatively minor concern given the paucity of significant findings.

Conclusion

In respect of the question as to whether differences exist in achievement, self-report measures of school effectiveness and attrition rates between students attending French immersion programs in single track and dual track schools, significant differences in attrition rates emerge as the sole measure that distinguishes the single track and dual track groups in this investigation. Further study is warranted to better understand the factors that contribute to this finding. In regard to achievement and self-report measures of school effectiveness on the part of students and parents/guardians, aside from a small number of significant differences, by and large, students enrolled in French immersion programs in single track and dual track schools are achieving at the same levels, and students and their parents/guardians are responding to items pertaining to school effectiveness in ways that make them indistinguishable on the basis of single track and dual track grouping.

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