OECD Study on Enhancing Learning through Formative Assessment and the Expansion of Teacher Repertoires

Canadian Report

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Council of Ministers of Education, Canada
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CMEC

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Acknowledgments

Canadian participation in this OECD study involved five provinces, Saskatchewan, Manitoba, Ontario, Quebec, and Newfoundland and Labrador, which led the team, coordinated by the CMEC Secretariat. This international comparative study involved participating countries contributing a report and hosting a site visit by an OECD examiner expert in the field of formative assessment. All five provinces participated in the Canadian report; Newfoundland and Labrador, Quebec and Saskatchewan also hosted site visits.

The study aims to contribute to an in-depth understanding of the way that teaching and learning takes place and student progress is assessed as a formative process, using a small number of exemplary innovations. When the OECD Ministers of Education met in April 2001, a significant part of their discussion was devoted to the promotion of innovative teaching and learning strategies – this study aims to deepen the understanding of what is possible.

In 2002, the CMEC invited the provinces and territories of Canada to participate in this review and the five provinces mentioned above completed the questionnaire (see Appendix A) that formed the basis of this report. The following contact persons in these jurisdictions provided the source documents used in compiling this report: Marian Fushell, Director, Department of Education, Newfoundland and Labrador, Diane Charest, Direction de la recherche, des statistiques et des indicateurs, et Martine Gauthier, Direction de la formation et de la titularisation du personnel scolaire, Ministère de l'Éducation du Québec, David Anderson and Rick Johnson, Saskatchewan Learning, Anne Longston and Cheryl Prokopanko, Manitoba Department of Education, Catherine Rankin, Michael O'Gorman, and Sylvia Larter, Ontario Ministry of Education. Sheila Molloy of the CMEC Secretariat coordinated the project, assisting the lead province, Newfoundland and Labrador. These coordinators were responsible for planning the structure of, and requesting material for, the Canadian report presented here and for reviewing and providing thoughtful input and revisions to the various drafts, the work of the principal writer, Anne-Marie Caron-Réaume. (A list of contacts is included in Appendix B). As well, we would like to point out the important contribution made by the individuals who read and commented on the draft report they received and thus provided additional valuable information.

For Newfoundland and Labrador, Quebec, and Saskatchewan, the three provinces that participated in the OECD study, extracts from the OECD examiners' report make up the section subtitled *Findings of the study*. The OECD examiners' report of the activity is complementary to this document and is available from the OECD Secretariat OECD publication (ISBN: 9264007393): *Improving Learning through Formative Assessment: Cases, Policies, Research*, OECD, 2005 (www.oecd.org).

Introduction

The focus of this OECD study is an in-depth understanding of the way that teaching and learning takes place and student progress is assessed as a formative process, using a small number of exemplary innovations. When the OECD Ministers of Education met in April 2001, a significant part of their discussion was devoted to the promotion of innovative teaching and learning strategies: this study aims to deepen the understanding of what is possible. The importance of tailoring instruction more closely to student learning needs and to individual progress, rather than to suit the administrative convenience of education systems, is a long running theme of the lifelong learning agenda. This study addresses this issue with students in lower secondary schools.

In Canada, Newfoundland and Labrador led a team of five provinces, Saskatchewan, Manitoba, Ontario, and Quebec, which all provided descriptions of their policy and program context, as well as data on their particular case studies, based on an OECD questionnaire (Appendix A). Newfoundland and Labrador, Quebec and Saskatchewan also participated in the in-depth analysis by identifying a case study (based on criteria established by OECD and country experts) and by hosting a study visit from an OECD expert in April 2003. The CMEC coordinated the activity in Canada.

Education in Canada

Canada — a vast country stretching across the northern half of North America from the Atlantic Ocean to the Pacific Ocean and north to the Arctic Ocean — is a confederation of ten provinces and three territories. Within its federal system of shared powers, Canada's Constitution Act, 1867, provides that "[I]n and for each Province, the Legislature may exclusively make Laws in relation to Education." While there are a great many similarities in the provincial/territorial education systems across Canada, they each reflect the diversity of the region's geography, history, and culture. Responsibility for education at all levels is vested in provinces and territories.

The historical and cultural events, culminating in confederation in the 19th century led a century later to Canada's adoption of the Official Languages Act (1969, revised in 1988). This Act establishes French and English as the official languages of Canada and provides for special measures aimed at enhancing the vitality, and supporting the development, of English and French linguistic minority communities.

Across the country, according to the 2001 Census, 67 per cent of the population speak English only, 13 per cent speak French only, and 18 per cent speak both English and French. English is the mother tongue of about 59 per cent of the population, while French is the mother tongue of 23 per cent. In Quebec, 41 per cent of the population speak both languages, while another 54 per cent speak only French. In other provinces, the proportion of those who speak both languages decreases — for example, in New Brunswick, 34 per cent; in Ontario, 12 per cent; in Manitoba, 9 per cent. Education is available in either official language in Quebec and New Brunswick, and in other provinces and territories wherever numbers warrant.

The federal government department of Indian and Northern Affairs Canada (INAC) is responsible for the elementary and secondary education of Registered Indian children living on reserves, either through First Nations-operated schools on the reserves, provincially administered schools off the reserves, or federal schools operated by INAC on the reserves. The department also provides financial assistance (through administering authorities such as First Nations councils) to eligible Registered Indian students in postsecondary education programs, and it funds some programs designed for First Nations students at both First Nations and other postsecondary institutions. Educational services for Registered Indians in the Yukon and both Registered Indians and Inuit in the Northwest Territories are provided by the respective territorial governments. Registered Indians and Inuit in northern Quebec receive educational services from the province of Quebec under the James Bay and Northern Quebec Agreement.

The federal government also provides education and training to those who serve in the Armed Forces and the Coast Guard, and to those inmates serving time in penitentiaries and other institutions of Correctional Service Canada.

Elementary and Secondary Education
Each province has a ministry or department of education that is responsible for providing elementary and secondary education free until the age of 18. At the local level in all provinces and territories, members of school boards (or school districts, or school divisions, or the District Education Councils in New Brunswick) are elected by public ballot. The powers and duties of these "trustees," defined by provincial/territorial legislatures, are fairly consistent throughout Canada. Their authority usually includes the operation and administration (including financial) of the schools within their board, staffing responsibilities, enrolment of students, implementation of the provincial/territorial curriculum, and initiation of proposals for new construction or other major capital expenditures.

The ages for compulsory schooling vary from one jurisdiction to another, but most require attendance in school from age 6 or 7 to age 16. All provinces and territories also offer one-year kindergartens for 5-year-olds, which are operated by local education authorities. In addition, some jurisdictions provide early childhood services, including preschool programs or junior kindergarten. In most jurisdictions, elementary schools provide the first six to eight years of compulsory schooling, after which most children/adolescents go on to the secondary level where they can choose from a variety of programs leading to apprenticeships and the job market or to further studies at colleges and universities.

As students move through the secondary level, they complete a core of compulsory courses supplemented by some optional courses. Students can choose courses in specialized programs that prepare them either to enter the job market or to meet the entrance requirements of the postsecondary college, university, or institution of their choice. Students who pass the required number of both compulsory and optional courses graduate with a Secondary or school Diploma.

The point of transition from elementary to secondary school varies from jurisdiction to jurisdiction. Some school boards break up the elementary-secondary continuum by grouping kindergarten to grade 5, 6, 7, or 8 in elementary schools, or grades 6–8 in middle schools, or grades 7–9 in junior high schools, and the remaining grades in secondary schools or collegiates. In Quebec, students choose either the general education branch or the vocational education branch at secondary level (grades 7–11) and may continue in the vocational branch with publicly funded studies at the college level (see below).

Most public schools accommodate special-needs students (the physically or mentally disabled or the gifted) in various ways, whether in separate programs and classrooms or in a regular classroom where they follow the regular program, but receive additional support and assistance.

Private or independent schools provide an alternative to publicly funded schools in any province or territory, but they must meet the general standards prescribed by the ministry/department of education. In most cases, they follow closely the curriculum and diploma requirements of the ministry/department of education, except that they function independently of the public system and charge tuition fees. Some provinces — Alberta, British Columbia, Manitoba, Ontario, Quebec, and Saskatchewan — provide some form of financial assistance to these schools.

Postsecondary Education
In the graduating year of secondary school, students may apply to a college or a university, depending on the region and on their qualifications. Quebec students must obtain a college diploma if they want to proceed to a university program. The Quebec colleges, called "collèges d'enseignement général et professionnel" or "Cégeps," are free to all students; they offer both a general program that leads to university admission and a vocational program that prepares students for the labour market. In all other provinces and territories, students pay tuition fees for college programs and courses.

Postsecondary education is available in both government-supported and private institutions. Colleges such as technical and vocational institutions, community colleges, Cégeps, and others offer programs varying in length from six months to three years. These programs serve to train and develop students' knowledge and skills for careers in business, the applied arts, technology, social services, and some of the health sciences. In general, colleges award diplomas or certificates, not academic degrees. Some colleges and technical institutions, in cooperation with business and industry partners, offer diplomas in applied arts and sciences, such as professional development services, or they offer specialized programs in high-technology areas that prepare students for employment upon graduation.

The British Columbia community college system allows students to complete either a diploma program or two years of academic course work toward a bachelor's degree. Some students may decide not to continue, but others have the opportunity to complete the third and fourth years at a university-college or university to earn a degree. Only the universities may grant graduate degrees. In other provinces, students must have their completed college courses evaluated for equivalency in order to receive credit when they apply for admission to a university.

Most Canadian universities offer three-year or four-year programs leading to bachelor's degrees, depending on the program. Universities, in some provinces, grant a general Bachelor of Arts (B.A) or a Bachelor of Science (B.Sc.) degree after three years, but require a fourth year (or four years in total) of specialized study for an honours degree (H.B.A. or H.B.Sc.). Other provinces require four years of study before granting either a general or an honours degree. The larger universities offer a complete range of programs; others are more specialized and have developed specific areas of excellence. Along with some specialized institutions that are not campus-based, some offer courses and programs through distance education by correspondence or telecommunication.
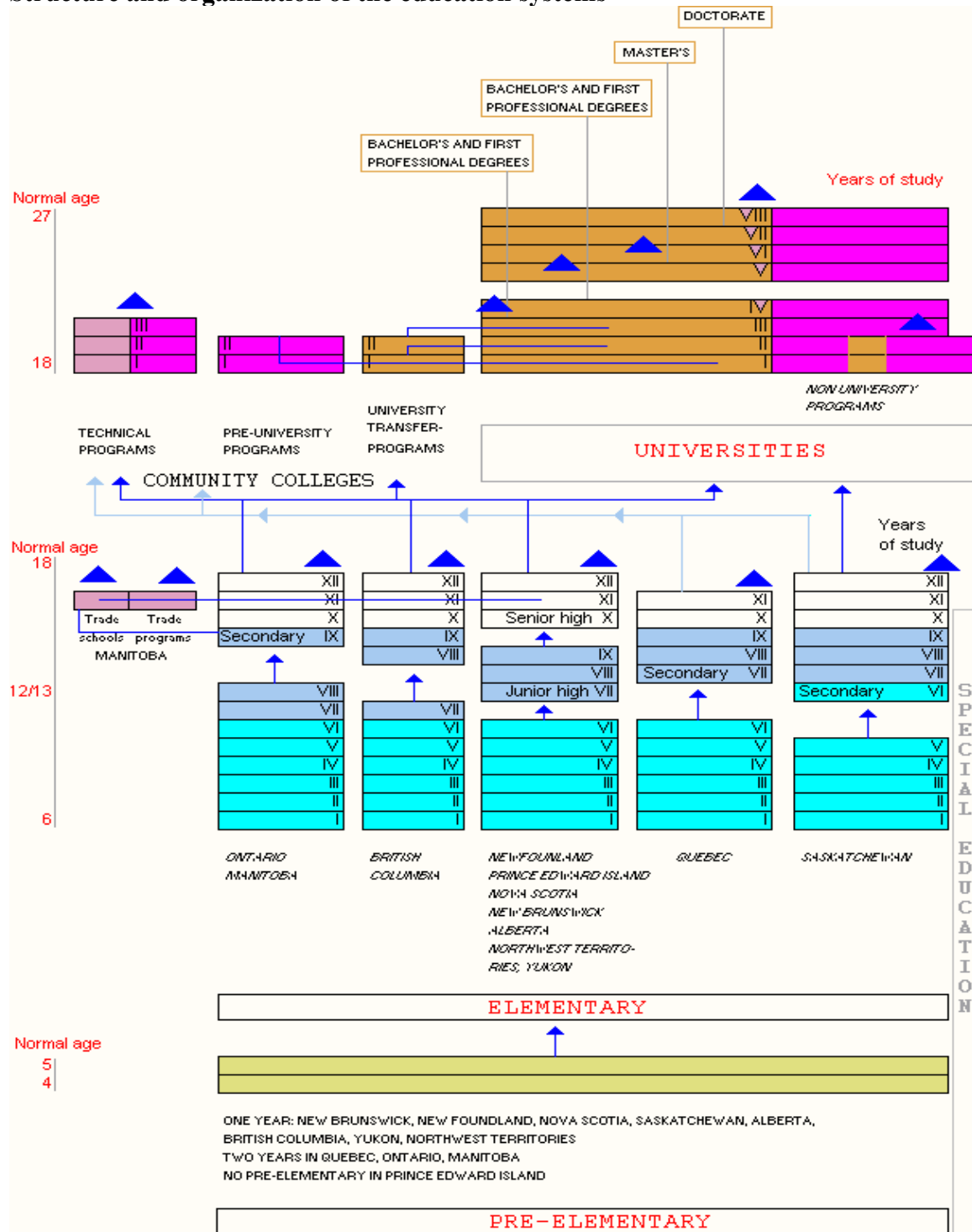
It is possible to pursue specialized advanced studies through three levels — from the bachelor's degree to a master's degree and on to a doctoral degree — at those universities that offer graduate studies and degrees. To achieve a master's degree, students pursue one or two years of further study, depending on whether their undergraduate degree was a general or an honours degree. Some institutions require the student to produce a thesis or to work through a professional practicum for the master's degree. For the doctorate, students spend three to five more years after that, usually researching, writing, presenting, and defending a thesis, in addition to attending seminars and a specified number of courses.

The Council of Ministers of Education, Canada
In 1967, the Council of Ministers of Education, Canada (CMEC) was formed to provide a forum in which the provincial/territorial ministers could discuss matters of mutual interest, undertake educational initiatives cooperatively, and represent the interests of the provinces/territories with national education organizations, the federal government, foreign governments, and international organizations. CMEC provides a national voice for education in Canada and, through CMEC, the provinces and territories work collectively on common objectives in a broad range of activities at the elementary, secondary, and postsecondary levels.

Additional information is available at the following Web sites: http://www.cmec.ca/, http://www.educationcanada.cmec.ca, and http://www.cicic.ca.

Structure and organization of the education systems

DOCTORATE

MASTER'S

BACHELOR'S AND FIRST PROFESSIONAL DEGREES

BACHELOR'S AND FIRST PROFESSIONAL DEGREES

Years of study

Normal age
27

18

VIII
VII
VI
V

IV
III
II
I

NON UNIVERSITY PROGRAMS

TECHNICAL PROGRAMS

PRE-UNIVERSITY PROGRAMS

UNIVERSITY TRANSFER- PROGRAMS

UNIVERSITIES

COMMUNITY COLLEGES

Years of study

Normal age
18

12/13

6

Trade schools   Trade programs
MANITOBA

Secondary   IX

XII
XI
X

Secondary   IX
VIII
VII
VI
V
IV
III
II
I

ONTARIO
MANITOBA

XII
XI
X
IX
VIII
VII
VI
V
IV
III
II
I

BRITISH COLUMBIA

Senior high   X
IX
VIII
Junior high VII
VI
V
IV
III
II
I

NEWFOUNLAND
PRINCE EDWARD ISLAND
NOVA SCOTIA
NEW BRUNSWICK
ALBERTA
NORTHWEST TERRITO- RIES, YUKON

XI
X
IX
VIII
Secondary   VII
VI
V
IV
III
II
I

QUEBEC

XII
XI
X
IX
VIII
VII
Secondary   VI
V
IV
III
II
I

SASKATCHEWAN

SPECIAL EDUCATION

ELEMENTARY

Normal age
5
4

ONE YEAR: NEW BRUNSWICK, NEW FOUNDLAND, NOVA SCOTIA, SASKATCHEWAN, ALBERTA,
BRITISH COLUMBIA, YUKON, NORTHWEST TERRITORIES
TWO YEARS IN QUEBEC, ONTARIO, MANITOBA
NO PRE-ELEMENTARY IN PRINCE EDWARD ISLAND

PRE-ELEMENTARY

Colour code: **Pink** - Programme designed for part-time attendance
Mauve - Vocational education and training
Blue triangle - Recognised exit point of the education system
Blue arrow - Typical student flow

Source: **OECD, 1995, p. 262**

A Review of Research in Canada on *Formative Assessment*
Traditionally, classroom assessment has consisted of student evaluation at the end of each
unit of study to assess the extent to which students have retained the instruction and has been
largely based on memorization rather than actual internalization of information (Stiggins,
1997). Such assessment practices provide information to be used in decision making
concerning promotion, retention, and certification and therefore, serve a summative function.
These practices have for many years been the mainstay in Canadian classrooms. For
example, in a study of student evaluation practices in British Columbia, Anderson (1989)
found that testing is a common classroom practice. Throughout the last decade, there has
been a collaborative effort among policy makers and educators to modify classroom
assessment practices and strategies in an attempt to enhance student academic achievement.
All Canadian jurisdictions are engaged in some assessment activities that support student
learning. For assessment activities to support learning, the activities must provide
information to teachers and students that is then used to adjust the teaching and learning
process. When the information is used to adapt teaching to meet the learning needs of
students, the assessment becomes formative (Black & Dylan, 1998).

This review includes a survey of Canadian journals and papers published by Canadian
researchers (see Appendix C). The volume of research on formative assessment is low. In
fact, very little empirical research on classroom assessment has been conducted within
Canada. The projects that are included in this review do not necessarily use the term
formative assessment but there is evidence of a formative function throughout each
investigation. Instead, most researchers have used the term classroom assessment. The
studies that are part of this review fall into one of three categories: models for classroom
assessment, classroom assessment practices, and barriers to new and/or different classroom
assessment practices.

Much of the research that has been conducted throughout the past decade had its conceptual
beginning at conferences on classroom testing held in British Columbia in 1989 and again in
1990. Many issues identified by measurement specialists in Canada focused on the
dichotomy between traditional measurement theory and changes in classroom practice that
were emerging under the umbrella of authentic assessment. These conferences were initiated
to examine many of the issues facing Canadian schools including the utilization of classroom
assessment by student teachers and practicing teachers (Wilson, 1992); the construction of
curriculum relevant tests with teacher-made tests in mind (Randhawa, 1992); the assessment
of complex outcomes of education, such as group discussions and complex problem solving
(Nagy, 1992); ideal notions of classroom assessment versus actual classroom assessment
(Anderson & Bachor, 1992); the current and emerging needs of education practitioners
(McIntyre, 1992; Taylor, 1992); and assessment training for teachers in the classroom
(Stiggins, 1992). The papers presented at the conferences explored classroom assessment
strategies and how these practices can utilize knowledge and theory of educational
measurement (Bateson, 1992).

Models for Formative Assessment
In Canada, a number of different models for classroom assessment have been developed and implemented. Richard & Godbout (2000) propose that in order for formative assessment to become a systematic part of the teaching-learning process, it has to be planned along with instruction. In their model, three facets of formative assessment are described: communication of expectancies and success criteria, collection of information, and regulation of learning. Students must know, in advance, what is expected of them, students and teachers must know if students succeed, and teachers must prepare different learning strategies to ensure all students progress. These facets are not necessarily or merely sequential. Teachers can return to a previous phase so that a progressive teaching-learning process exists.

Bachor et al. (1994) also provide a framework for classroom assessment practices. Assessment practices should meet three criteria: representativeness, accuracy, and consistency. The assessment activities must reflect the curriculum and instructional outcomes; the information collected recorded, interpreted and reported must be error free and precise; and the information must be used consistently so that each student is evaluated for a given outcome on the same basis. Two means of collecting information that are considered authentic and that can be used to meet the criteria are observations and portfolios. Applying these criteria to observations and to portfolios helps ensure their quality as teachers judge the extent to which these practices meet the criteria.

Dassa, Vázquez-Abad, & Ajar (1993) proposed using a Computer Based Learning (CBL) program to facilitate formative assessment in classroom settings. The authors assert that computer innovations introduce a possible solution provided that they are developed so that they fully support differentiated teaching based on formative assessment. The computer assessment-based model can provide an educational diagnosis: define the error, identify the nature of the error, relate the error to the teaching and learning, and propose possible interventions. This system has a three-dimensional structure: diagnostic context, notional content, and cognitive ability, which allows teachers to obtain maximum information for each student and then use this information to plan instruction. It can be implemented as a whole classroom activity to establish and profile the students' individual and collective difficulties or in remedial teaching where the teacher meets with students on a one-to-one basis to discuss difficulties and/or progress (Dassa et al., 1993).

Two schools in the Montreal, Quebec area are implementing the model with secondary mathematics teachers. The teachers have each administered eight testing sessions for specific curriculum objectives and are using that information to plan their instruction. Early indications are that the model is effective.

Teachers' Assessment Practices
There has been some work completed that had a focus on investigating teachers' assessment practices. A study conducted in 1999, which explored assessment practices and perceptions of pre-service teachers, was analyzed by different researchers using varying perspectives and approaches to research. The study used a language arts portfolio prepared specifically for this study to track the progress of a simulated grade 8 student named Chris. The 147 participating pre-service teachers were given the portfolio as well as background information about Chris. The researchers created different profiles of Chris based on expectations (high,

middle, low socio-economic status), growth (improving, steady, falling behind), parental involvement (parents who did or did not respond to invitations from the school), and gender. Throughout a 10-week period, participants read Chris' work, monitored his or her progress, graded a final examination, and provided a report card grade. Both quantitative and qualitative research methods were used throughout the investigations. The results were reported in a series of articles and are summarized below:

1. Wilson and Martinussen (1999) investigated the extent to which contextual information affects teachers' judgements about a student's growth and achievement. They found that objective evidence about a student's performance was not the sole determinant of a student grade. Early expectations and early judgements based on what Chris said or did influenced the final grade.

2. Anderson (1999) analyzed the student scores and grades using structural equation modeling. He determined that the assessment of student achievement is not based on achievement only but involves a number of underlying factors such as growth and student background. He also found that the influence of these factors varies across achievement products.

3. Shulha (1999) focused on both written and oral feedback provided by participants to gain an understanding for the complexity of thinking that contributed to novice teacher assessment practices. Feedback provided to students was divided into five categories: relationship building with the student, specific improvement on a piece of work, the marking criteria, encouragement for the student, and comments regarding the student's overall general improvement. This analysis suggests that the growth profile (improving, steady, or falling behind) influences the teacher's perception of student work in several categories. For example, specific constructive feedback was provided to the falling behind group more often than the improving group. Within the marking criteria category, the falling behind group tended to receive more comments on the mechanics of writing than either the improving group or the steady group.

Shulha, Wilson, & Anderson (1999) presented a synthesis of these research findings and the benefits of using a mixed-method approach to research. For the three investigations, it was determined that factors other than Chris' performance affected the judgements of participants regarding Chris' achievement and consequently, his or her grades. Additional information gathered through participant behaviours and reports indicate that preservice teachers are seeking more knowledge and greater understanding of student assessment. Participants questioned how to involve students in their own assessment, whether or not traditional methods of assessment needed adjusting, and commented that tasks assigned to students should be directly related to instructional goals and marking criteria.

A study by Lock & Munby (2000) also found that students' final grades appear to be influenced by students's socio-economic status and other contextual data. A case study, conducted over a 12-month period, indicated that beliefs about teaching and learning,

understanding newer forms of assessment, and the school environment influence student assessment practices.

A study reported by Noonan and Yackulic (1995) implemented over a two year period using schools within the Saskatoon Catholic Board of Education focused on a review of existing practices and ways to improve teachers' and administrators' understanding of classroom assessment. The project was initiated because the school board was involved in the implementation of new curricula, and changes in classroom instruction emphasized the importance of integrating instructional strategies and assessment methods. The evaluation undertaken near the end of year one indicated that teachers were not comfortable discussing assessment practices, and that teachers expressed a need for improvement in observation skills, performance assessment, and the interpretation of different approaches to classroom assessment (Noonan & Yackulic, 1995).

At the end of year two, another evaluation was undertaken and it appeared that teachers' initial concerns diminished once they began to use alternative assessment practices and different ways to report results to students and parents. The project helped to define the essential assessment skills for teachers and indicated that the principles of authentic assessment present a viable framework for a comprehensive approach to classroom assessment (Noonan & Yackulic, 1995).

The Assessment Training Consortium, a network of five Ontario school boards, participated in the Millennium Project. The Millennium Project was designed as a working example of performance-based assessment and was also intended to encourage educators to become more attuned to the practice of emphasizing student involvement in classroom learning (Cooper & Wakeman-Jones, 2000; Schmidt & Plue, 2000). The project required that students work in small groups for several weeks investigating and proposing solutions for a real-life problem in their school or community. Evaluation criteria for the students included critical thinking skills, research skills, ability to synthesize information, and communication.

Schmidt & Plue (2000) observed the experiences of teachers and students during the pilot stage of the project, and reported that teachers encountered challenges with implementing different assessment strategies, assessing student progress and reconciling assessment data with grading requirements. Teachers also indicated that at times they felt inadequate with the content of the project, and raised concerns about time required for the project and their ability to cover the curriculum. Conversely, teachers noted that students appeared to be really engaged in the project and enjoyed the non-teacher-directed approach to learning. Cooper and Wakeman-Jones (2000) believe these observations indicate that it is level of student engagement, not the structure and control evident in the typical classroom, that improves student learning. The project engaged teachers in discussing their current teaching and assessment practices and resulted in significant change in their approach to assessment (Schmidt & Plue, 2000). This project has provided information for both teachers and policy makers regarding the development of assessment skills that are necessary to promote alternative assessment strategies in schools.

Barriers to Changing Assessment Practices
Several studies have focused on the challenges that teachers encounter when they are in the process of implementing new and different assessment practices. Using a long-term case study approach, Lock & Munby (2000) investigated the factors that affect the implementation of a new assessment program. The study focused on how the beliefs and practices of teachers influence the integrating into practice different forms of assessment, such as portfolios and student conferencing. The results of the study are categorized into four themes:

1. **Beliefs about teaching and learning**. Evidence indicates that a teacher's beliefs impact classroom practice.
2. **Understanding new assessment practices**. The study showed that an understanding of student-centred assessment methods is critical for any change in classroom practice.
3. **Contextual influences**. In this study, the school environment limited changes in classroom practice.
4. **Involvement in research programs**. Collaborative research as done in the study contributes to greater understanding of assessment practices and also helps bridge the gap between educational research and teacher practice.

The study also revealed that professional development has little effect if participating teachers are hindered by the context of the teaching environment and by beliefs about teaching and learning (Lock & Munby, 2000).

Suurtamm (2000) reported on a study she carried out with secondary mathematics teachers in Ontario. The teachers were using authentic assessment and had been incorporating changes in curriculum and assessment practices. In the study, she examined the beliefs, practices, concerns, and support of the teachers. The challenges encountered by the teachers included having a curriculum that assumed traditional teaching, reporting methods, level of support from colleagues, and available time for study. The results indicate the factors that influence change in assessment practice are collaborative teacher culture, administrative support, and a problem-based curriculum.

Formative Assessment Practices in Canada
Within Canada, most jurisdictions have developed some policies and practices in formative assessment and have advocated a balance between large-scale testing and classroom assessment. Common features among jurisdictions include:

- providing tools teachers need to develop and implement a well-planned student evaluation program that uses assessment techniques for formative, diagnostic and summative purposes
- developing achievement standards for subject and grade specific courses that are supported by formative and summative assessment tools
- promoting alternative approaches to student assessment and the education of educational personnel to adopt and effectively utilize such practices in the classroom

- providing rubrics and exemplars to teachers as guides to varying levels of student performance
- developing provincial processes regarding the assessment of learners
- providing sample assessment strategies for classroom use
- providing teacher professional development opportunities for all teachers
- promoting the use of criterion-referenced evaluation as a means of classroom-based evaluations
- using the results of large scale assessments in a formative manner to guide academic intervention initiatives and to improve student learning.

Conclusion

While Canada has currently provided little empirical evidence regarding the effectiveness of formative assessment in classrooms, there is interest in the area of practices associated with student achievement and student testing. Furthermore, Canada has been in the process of using evidence based recommendations (e.g., Black & Wiliam, 1998; Stiggins, 1999) as a means of guiding new policies and procedures to optimize student academic achievement.

Many Canadian educational researchers and personnel consider formative assessment to be a key component of student learning (e.g., Richard & Godbout, 2000). However, the research findings indicate that the use of assessment for learning is not widespread and that teachers are more likely to adhere to summative assessment practices. For teachers to implement new assessment strategies that facilitate formative assessment, they have to be provided with direction and develop skills on how to effectively use formative assessment in existing classrooms. Governments and educational facilities alike are increasingly providing educators with research and suggestions for practising formative assessment in the classroom (Richard & Godbout, 2000; Manitoba Education Training and Youth, 2001). To change the assessment culture in Canadian classrooms requires a sustained plan that involves all educators.

The Case Studies

MANITOBA

Contextual Framework -- Provincial and district policy statements (improving student achievement, student evaluation, formative assessment, teaching and learning strategies)

Improving student achievement
The *Manitoba K-S4 Education Agenda for Student Success* (2002) highlights the need for a partnership between the family, the community and the school to further students' academic skills. Six priorities focus the educational partners on improving achievement for all students:
• improving outcomes, especially for less successful learners;
• strengthening links among schools, families and communities;
• strengthening school planning and reporting;
• improving professional learning opportunities for educators;
• strengthening pathways among secondary schools, post-secondary education, and work;
• linking policy and practices to research and evidence.

The policy document, *Renewing Education: New Directions (*1994), describes the essential skills and subject learnings for the province's students from Grades 1 to Senior 4 (equivalent to grade 12 in other jurisdictions). This education plan emphasizes four foundation skill areas – literacy and communication, problem-solving, human relations, and technology – that are part of teaching and learning across the curriculum.

The Manitoba Department of Education, Citizenship and Youth recognizes the professional development needs of its educators in implementing educational policies, and is consequently facilitating creative approaches for the delivery of professional development programs and information sharing. The province's initiatives enable teachers to expand their instructional repertoires so that students will be able to apply the four foundation skills across subject areas and to real-life problems and situations.

The document, *Curricular Connections: Elements of Integrations in the Classroom* (1997), encourages the acquisition of knowledge, skills and strategies through an interdisciplinary approach to learning and teaching. It supports curricular integration within Manitoba schools through helping teachers to associate different aspects of knowledge and skills in one or more subject areas and to make connections between the cognitive, affective and social domains so that learning is seen as relevant and meaningful.

The mandated provincial curricula contain grade-by-grade outcomes for each one of the compulsory subject areas. There are mandated provincial standards for the core subject areas of English language arts and mathematics and provincial, local and classroom-based assessment and evaluations. Standards tests for Grade 6 English language arts, Senior 1 mathematics, and Senior 4 English language arts and mathematics are fully congruent and based on curriculum outcomes and standards. They help to ensure that uniform, province-

wide expectations of what students should know and be able to do are met. As of 2005, the standards tests in Grade 6 and S1 will no longer exist, and will be replaced in 2006 by a middle-years classroom-based assessment.

Student evaluation
Reporting on Student Progress and Achievement: A Policy Handbook for Teachers, Administrators and Parents, currently under revision, provides a framework for assessment and evaluation to assist all partners in developing policies on reporting student progress and achievement that reflect Manitoba's educational renewal. A second document, now being developed, focuses on authentic assessment practices that involve students in solving everyday challenges and open-ended problems by integrating their knowledge and skills.

The policy framework encourages the use of assessment, evaluation, and reporting of student achievement to:
- enhance teaching and improve student learning;
- measure student progress and achievement on the basis of provincial standards and prescribed outcomes;
- make informed decisions about the appropriateness of the grade or course relative to the student's ability to succeed;
- assess student performance on a school, division/district, or province-wide basis;
- improve provincial and local curricula;
- promote school effectiveness.

The document, *School-based planning: A Continuous Process for Effective Education* (1996), examines the creation of an effective learning environment. In conjunction with the framework for assessment, evaluation and reporting, it is used to assist school divisions/districts and schools as they collaboratively develop their own local policies and practices that reflect the principles of fair assessment.

Formative assessment
Student learning is envisioned as a continuous, systematic and comprehensive process. In this context, the thrust of formative assessment in Manitoba's assessment and evaluation system is toward improving learning and instruction. It provides feedback both to students and teachers, highlighting students' progress with regard to what they have learned and what they have yet to learn or what learning strategies contribute to students' progress in relation to the outcomes-and standards-based curricula. The instruments used in formative assessment provide information that teachers, parents, and students may use to identify factors that facilitate or hinder student learning and to specify learning needs as well as instructional experiences to plan for improvement.

More comprehensive and detailed diagnostic assessment may also be needed to probe the underlying causes of learning difficulties in order to develop and implement an individualized plan to improve a student's learning. Principles and examples of classroom-based assessment that assist learning and inform instruction are integrated into resource documents that support teachers and administrators in the implementation of the renewed curricula.

Teaching and learning strategies
Planning for instruction, assessment, evaluation, and reporting is crucial to effective student learning. At the beginning of a block of instruction, teachers and students identify expected learning outcomes and establish performance criteria that correspond with provincial outcomes and standards. Students who are aware of expected outcomes are more focused on learning and more likely to assess their progress. They are also able to participate in creating appropriate assessment and evaluation criteria.

Success for All Learners: A Handbook on Differentiating Instruction: A Resource for Kindergarten to Senior 4 Schools (1996) presents an overview of strategies for differentiating instruction. Since students may demonstrate their achievement of expected learning outcomes in many ways, differentiating instruction and using a variety of learning experiences ensures that all students have opportunities to learn and to demonstrate what they know and are able to do.

Background on what initiated the Interdisciplinary Middle Years Multimedia (IMYM) Model

The Interdisciplinary Middle Years Multimedia (IMYM) Model, a curriculum-based research and development project, was initiated in response to the identification of Technology as a Foundation Skill (TFS) to be integrated throughout all Kindergarten to Senior 4 curricula. The purpose of the project was to develop an effective instructional model in learner-centred environments that supports the integration of information and communication technology with curriculum through an interdisciplinary approach to instruction at each grade level of the Middle Years. IMYM supports implementation of Technology as a Foundation Skill (TFS) by developing learning resources, such as technology-integrated interdisciplinary teaching units at each of the middle years grades (5, 6, 7, and 8), videos, and the Prairie Tour CD-ROM. Most importantly, the IMYM model supports professional learning for middle-years teachers and teacher mentors that has resulted in their restructuring their classrooms to use technology to support collaborative learning. IMYM professional learning serves as a vehicle for "learning about learning." It is a mirror in which teachers can see reflected their best practices for learning and teaching.

This four-phase project involved the selection of a minimum of 20 pilot schools in each of its four phases. Each of the pilot schools received $14,000 to implement a pre-selected $20,000 hardware/software model. Pilot schools had a choice of hardware platforms (Macintosh or Windows). Besides a $6,000 contribution, each participating school division made additional commitments in accordance with the application.

The four phases of the IMYM model were piloted in nearly 100 rural and urban schools starting with Grade 5 during the 1996-97 school year and ending with Grade 8 during the 2000-2001 school year. Pilot teachers were carefully selected based on a number of criteria, the most important of those being the level of experience in interdisciplinary instruction and instructional innovation, not necessarily on their level of information and communication technology literacy. The IMYM model is currently being implemented voluntarily in schools and school divisions across the province.

Qualitative evaluations based on an action research model were completed after each phase of the project. The IMYM pilot project was assessed internally using action research strategies and externally by Proactive Information Services Inc., a Canadian educational research company. These evaluations illustrate how the integration of information and communication technologies (ICT) with promising instructional practice can add value to teaching, learning, and assessing

District and school strategic plans (mission statement, goals, objectives)

School divisions
School divisions implementing the IMYM model share the provincial mission and vision of the IMYM approach, i.e., that students will be able to use, manage, and understand information and communication technology (ICT) in order to solve problems, think creatively, communicate effectively, improve their personal performance, and become life-long learners. The common vision of the IMYM model provides a framework within which teachers are able to make decisions about how to best align classroom-based assessment with learning goals and to plan instructional strategies to achieve student success.

School missions and plans
Teachers, along with the parent council, develop school missions that describe the values of the IMYM school. As well, a school plan is created on an annual basis and submitted to Manitoba Education, Citizenship and Youth, thus ensuring alignment of the different levels of the education system. The principal and a number of teachers draft the plan for the next year based on the current one, and then the whole staff discusses the goals and indicators of success. When the school develops its professional learning opportunities and allocates resources, it refers to the school plan as a way of affecting what can ultimately be done in the classroom. IMYM classrooms contain from 12 to 32 students of mixed gender, race, ability and personality, and reflect the usual age span of middle years' students from 10 to 14 years of age.

Parental participation
IMYM teachers find that they interact more with parents than before they implemented the IMYM approach. Because implementing this approach involves a process of change from what might be called traditional instruction, IMYM teachers find it important to include parents as well as colleagues, administrators, and students, in understanding and implementing the change process. IMYM teachers need to explain to parents the benefits of having a smaller team of teachers interacting with their middle years children (parents may be concerned that their children might need many subject area 'experts' to teach them). They also explain the benefits of students learning to work collaboratively as well as independently (parents worry about the dynamics of 'group work' and about who actually does the work). In conjunction with collaborative learning, teachers explain the ways in which students will be assessed as part of a learning team (parents are concerned about their children getting lower 'marks' as part of a group than they would through their own efforts). Teachers also explain the benefits of interdisciplinary learning (parents worry that their children may miss important concepts in any of the core subject areas).

Because the classroom environment has changed, parents are often welcomed into the IMYM classroom to see how it operates using learning centres and collaborative learning. Students and teachers prepare for 3-way student-led parent conferences that demonstrate to the parents, the skills their children have learned through ICT integration, and the products their children have produced as evidence of their interdisciplinary achievements. A grade 7 IMYM student speaks of his parents' involvement: "My parents can go to our classroom Web site to see what work we are doing, what our homework is, and when we have tests. They like to see samples of my work and other students' work on our Web site. Sometimes they e-mail my teacher, or my teacher e-mails my parents. My parents help me do research on the Internet. When my parents come to our student-led conferences, I show them my electronic portfolio. We also set up our own learning centres to show our parents different parts of our work."

Description of the IMYM School Project
In each phase of the project, a model 6-8 week thematic concept-based interdisciplinary unit was developed to support teachers in integrating ICT into curriculum. Within these units, the core subject areas are blended around a theme or concept focused on a real context. Learning becomes more meaningful for students in this environment because they are not just acquiring unrelated facts in different subject areas but are drawing connections among subject disciplines. Developing these connections requires the use of higher level thinking skills such as problem solving and critical analysis.

IMYM teachers believe that learning is the active process of constructing meaning through the interaction of prior knowledge, intrinsic motivation, and engaging experiences. IMYM students' study of interdisciplinary real-world concepts enhances their understanding of the principles that underlie each of the component subject areas. The interconnected nature of the interdisciplinary concepts provides a stronger foundation for the structure of each of the disciplines as they support each other. IMYM students adopt these structures in building their own unique understanding of the principles of language arts, mathematics, science, and social studies.

In language arts, IMYM students learn to read, write, listen, speak, view, and represent. In mathematics, students learn to solve problems, communicate mathematically, estimate mentally, reason mathematically, make connections, use technology and visualize mathematical relationships. In science, students develop an understanding of the concepts of similarity and diversity; systems and interactions; change, constancy, and equilibrium; and energy. In social studies, students develop an understanding of the concepts of citizenship and identity; historical connections; global interdependence; power, authority, and decision-making; economics and resources; culture and community; and places and people.

The instructional model being employed by the IMYM Project shifts the role of the teacher from disseminator of information to a facilitator of active learning. The use of ICT in the IMYM project facilitates the integration of curriculum and allows students to acquire the information and communication technology skills and competencies necessary to function in today's society. The use of information technology allows middle years students to:

- Develop knowledge, ability, and responsibility in the use of information technology;

- Acquire, organize, analyze, evaluate, and present information using appropriate information technology;

- Use information technology to expand the range and effectiveness of their communication;

- Solve problems, accomplish tasks, and express creativity, both individually and collaboratively, using information technology;

- Understand the role and impact of information technology, and apply ethical, responsible, and legal standards in its use.

In addition to the above, information and communication technology supports teachers in using formative assessment, differentiated instruction, and addressing the variety of learning styles and multiple intelligences found in an IMYM classroom. ICT can be designed to interface with any or all of the eight intelligences identified by Howard Gardner. Word processing software, for example, calls forth from its users a certain level of linguistic intelligence. draw and paint software, on the other hand more often requires spatial intelligence. Perhaps the most exciting ICT application involving multiple intelligences is the area of hypertext. A hypertext project incorporating text (linguistic), illustrations (spatial), sound (musical or linguistic), and video (bodily kinaesthetic) can be developed individually (intrapersonal) or in groups (interpersonal). These hypermedia projects can be stored on various digital media such as CD-ROM, the Intranet, or the Internet to serve as part of the student's "electronic portfolio." These portfolios can be passed from one teacher to the next as part of authentic assessment of the student's accomplishments during the year. The instructional model used in the IMYM project was based on research, which has been summarized in *Curricular Connections: Elements of integration in the Classroom*.

Inputs
- interdisciplinary instruction
- real world context
- middle years organization and structure
- access to ICT in the classroom

Processes
- collaborative learning
- active learning
- constructivist learning

Outcomes
- student achievement of outcomes
- student acquisition of ICT skills and competencies
- student responsibility for learning

- student intrinsic motivation and engagement
- satisfied teachers and parents

Evaluation
- authentic assessment

Findings

Analysis of the impact of the IMYM approach on the student (test scores, examples of student work, evidence of improved student performance and motivation)
The IMYM approach leads to higher student motivation and responsibility for learning. It also encourages the teacher to take a constructivist approach to student learning within which new knowledge is built on a strong foundation of existing student knowledge. IMYM students are able to demonstrate a deep conceptual understanding that is often beyond expectations of simply achieving curricular outcomes. Students claim that preparing for assessment is 'easy', while teachers believe the assessment tasks are actually more challenging. IMYM teachers have expressed satisfaction with a renewal in their energy to teach and in their own motivation and feeling of success. They have been heard to say that they cannot imagine teaching again in any other way. Even though an IMYM class may take more time to explore a particular concept, teachers report that IMYM students score just as well and even better than non-IMYM students using common assessment instruments such as divisional examinations.

What IMYM students are most likely able to do at the beginning of a school year varies with the grade level. At the beginning of grade 5, students are expected to have only 'exploratory' experience with ICT, while by the end of grade 8, students are expected to be able to use and choose appropriate ICT tools to further their learning. These tools include word processors, databases, spreadsheets, concept mapping, presentation, e-mail, Internet research, web page authoring, multimedia authoring, and video editing.

IMYM students are more confident in their ability to understand novel material and to solve complex real-world problems. They collect and analyze data on the level of their understanding by means of a K-W-L strategy (Know-Want to know-Learned). This helps them to assess their own prior knowledge and to set realistic learning goals in the context of any new subject matter being studied. They are able to use an effective inquiry approach to problem solving that can be applied to scientific, social, or mathematical problems. Using this approach they plan and focus their inquiry, select and process information and resources, and organize, record, and assess their solution. IMYM students have more choice, interest, and independence in their school day. Through their exploration of real-world applications, they develop a deeper understanding of and can see a purpose for their learning.

A grade 8 IMYM student speaks of the relevance and transferability of the high level thinking skills and cooperative competencies that are being developed: "I enjoy working in different groups. I also like to organize what our team does so that we can follow our plan and be more independent learners. When we get older, we know we will have to be more independent and not rely on our teacher to give us the answers. Using the technology was

another one of my favourite parts of IMYM. I like using the video camera, digital camera, laptops, Internet, everything. Although we use the Internet to search for current information, we also have to analyze the information we find to see if it comes from a good source and is reliable. We're also learning how to use our time wisely, because we have to finish each module in one week. It helps us to learn to manage our time really well."

The type of writing/homework that a IMYM student does involves developing the range of language functions and all aspects of the writing process. In grade 7, for instance, the students decide together what they think are the qualities of an outstanding, a good, and only a passable product or performance. The teacher sometimes shows examples of work done by other classes. This helps students visualize what the final work might look like and gives more ideas of what they are working toward and what the teacher expects. The importance that a grade 8 student gives to grades and comments varies according to the task: "I look at grades first because it is the first thing that meets my eye. Comments are definitely the most helpful, especially when they are on projects. There are rarely comments on tests, so I tend to focus on the grades. I think that grades matter the most on tests and comments on other work."

The IMYM classroom (logistics, course content and goals, flow and content of discussion, checking for understanding, testing)
Teacher - student interaction in learning/teaching tasks in the IMYM classroom
The teaching and learning process in an IMYM classroom is iterative. It spirals and builds on itself, with future learning planned on the basis of prior learning. It involves both teacher and student in taking responsibility for learning. Its goal is to produce students who know how to learn.

Teachers in an IMYM classroom act much less like the "expert" and the "authority figure" and much more like a "coach" and "co-learner". Students take more responsibility both for their individual learning and their group work. Expectations for behaviour are higher and monitored intrinsically by students within group norms. Teachers and students work together to "construct" understanding of the concepts studied. IMYM teachers use a collaborative approach, combined with a moderate amount of direct instruction to allow students the opportunity to choose from a variety of learning styles and to demonstrate their understanding using a variety of performance and product assessments.

Students in an IMYM classroom are motivated by the active approach to learning and the interconnections of curriculum outcomes within a real world context. Students often work independently and in collaborative groups within learning centres using a project-based constructivist approach. Students also take responsibility for their learning and are active producers of knowledge rather than primarily consumers.

To evoke information about the students' current level of knowledge, and encourage them to explore further, IMYM teachers activate student prior knowledge at the start of each learning experience. Activating strategies include KWL , brainstorming, and concept mapping. By using activating strategies at the beginning of each learning experience, students become aware not only of the extent of their own prior knowledge, but of the prior knowledge of the students in their group. This allows the group to set realistic goals for achieving what they want to learn through the course of the learning experience.

The IMYM teacher interacts with the class as a whole at the beginning of each day and periodically throughout the day at checkpoints. Primarily the teacher works with small groups and conferences with individual students. Occasionally, the teacher sets him/herself up as a "learning centre" so that as each collaborative group rotates through the learning centres they eventually end up meeting with the teacher.

The IMYM classroom is set-up to accommodate small group work. Desks are grouped together or else small tables are used for collaborative group work. Multimedia computers and/or laptops are distributed around the perimeter of the classroom and also at the collaborative group tables. Learning centres are set up at each computer and collaborative group work area.

IMYM teachers communicate learning goals explicitly at the beginning of each new learning experience. They continually connect new learning expectations with the culminating learning task. This is done through reference to the KWL activating strategy, a concept map of the process leading to the culminating task, and written outcomes on the instruction sheets at each learning centre.

Louise Moreau, a grade 8 IMYM teacher, describes the highlights of "watching reluctant students flourish in the IMYM model. They go from being afraid of making mistakes to discovering the joy of making one and then problem-solving to rectify or figure out the situation. Group work and cooperation among peers increased tremendously in this classroom setting. Parents loved coming in for the three-way conferences in the fall to view their child's on-line portfolio in progress and IMYM allowed them to relax more and enjoy learning. As an IMYM teacher, I give up control of the classroom more. This has sometimes proven difficult with overbearing and non-focused students -- but, on the other hand, I found that I was able to give them more individualized time while the other students were busy learning to use the technology."

Attention to the learning styles of individual students and differentiation of learning in the IMYM classroom
IMYM students come with a complete spectrum of learning needs. Some require an additional learning challenge, others may have experienced a lack of motivation to learn, and still others may have developed low self-esteem due to poor achievement in the past. The structure of the IMYM classroom, i.e., the collaborative learning, the integration of ICT, the element of student choice and responsibility for learning, the group work, and individual learning centres, provides teachers with a wide selection of teaching and learning strategies. IMYM teachers also use a wide variety of assessment instruments to ensure that they address students' individual learning needs.

IMYM teachers allow students time to process a question. They also realize that the size of the group influences the quantity and the quality of individual responses. It is for this reason that most work, discussion and dialogue occur in small collaborative groups. IMYM students are explicitly taught collaborative work strategies and how to be good listeners as well as good speakers.

IMYM teachers manage the different abilities of students (different abilities, different levels of motivation, loud or quiet students, "problem students," male and female students, students of various ethnicities, ages, SES backgrounds) through a variety of grouping strategies, primarily by creating heterogeneous groups. In this way, students with strengths in different areas work together in a stronger unit that works on the same task as every other group. Occasionally, homogeneous groups are created and the task is variable, with the more 'able' groups assigned a more challenging task. IMYM teachers use explicit collaborative group working strategies to ensure that each student has a turn as group leader, computer operator, timekeeper, researcher, etc. Students also self-assess and peer-assess their group work processes to ensure that all students contribute to the completion of each task.

IMYM teachers watch for the 'a-hah' moment, to 'catch' their students learning. This is most evident when a student volunteers to 'share-the-learning'. 'Share-the-learning' is both a structured and a serendipitous opportunity to demonstrate that a new skill, strategy, or item of content has been acquired or discovered. Teachers also set up formal peer tutoring in ICT skill areas, using an 'each one teach one' strategy. This gives students many different opportunities to acquire and to teach a concept.

IMYM teachers are able to manage the variety of student needs, the competing demands of curricular areas, testing and other bureaucratic requirements through freeing up time for the new instructional and assessment approaches. They decrease the range of content outcomes and concentrate on deeper learning of key concepts. They also manage the competing demands of various curricular areas by combining them in interdisciplinary learning experiences, themes, and tasks. The combination of curriculum outcomes allows many of them to be achieved through a single learning sequence. IMYM teachers often work in teaching teams. This allows the interdisciplinary planning, assessment, marking, and reporting to be shared.

IMYM teacher makes learning and formative assessment visible
To give students a preview of what they will be learning and how it fits into the larger context of the interdisciplinary unit, IMYM teachers use the Activate – Acquire – Apply – Assess process for constructing and delivering learning experiences. In this way, students are always aware, in the activating portion of the learning experience, what the goal and purpose is. In addition, part of the cycle of Activate – Acquire – Apply – Assess, allows IMYM teachers to constantly revisit and recap prior learning. The use of concept mapping software in the IMYM classroom allows students, teachers, and parents to visualize the conceptual development of each student

IMYM teachers as much as possible, provide alternative pathways for students that they might take to lead to improvement in their achievement. They differentiate instruction to take advantage of the various "intelligences" and learning styles of the broad spectrum of students who form their class. They also provide variety and often a choice in assessment tools and products. IMYM teachers often use rubrics, developed in conjunction with students, to clarify the indicators of beginning, developing, accomplished, and exemplary achievement. In this way, feedback on the student's current level of achievement is linked to an expected level of achievement and the evaluative comments are linked to criteria indicating those features that add to or detract from high quality.

Through use of collaborative teams and a combination of individual and group work as well as "scaffolding techniques"(providing as much or as little help as the student appears to need), IMYM teachers provide students with an appropriate level of support. Because the IMYM approach is interdisciplinary, it means that each teacher teaches more than one subject to each class and thus there are fewer teachers per class. When teachers spend more time with fewer students, they are better able to understand the learning needs of each student.

Students are provided the opportunity to discuss how to remedy any weakness with their peers, or independently. IMYM teachers often use e-mail and a classroom Web site to communicate with individual students, their parents, and the entire class. Individual feedback is given through teacher conferencing, peer conferencing, and in written form. The provision of non-evaluative descriptions of the features of a students' work (e.g., conference with students as appropriate) is a formative assessment process that allows IMYM teachers to examine the students' work-in-progress and together to plan further work. In preparation for student-led 3-way conferences with parents and teacher, IMYM students prepare a portfolio of their work from their electronic collection of products and learning processes. Students reflect on how their work demonstrates their conceptual understanding and learning progress.

Principles of Assessment in an IMYM classroom
One of the most important principles of sound assessment in an IMYM classroom is 'targeting', not 'tagging' learning outcomes. This means that the assessment task is planned around the outcomes, before the outcomes are even approached using a variety of learning experiences.

Another important principle is choice. Students in an IMYM classroom are given a choice of a variety of assessment tasks so as to be able to work on those that will best illustrate their understanding and match their learning style.

A third important assessment principle is clarity. IMYM teachers and students both participate setting the descriptors for assessment in advance of the assessment task. This allows transparency and mutual understanding of indicators for beginning, developing, accomplished, and exemplary levels of achievement.

The last important assessment principle is variety. IMYM students are assessed using a variety of assessment instruments such as teacher observations, checklists, final products, performances, and rubrics as well as paper and pencil summative tests. They also use a combination of self, peer, and teacher assessors. As well as direct instruction to the whole class, IMYM teachers use peer tutors and small group instruction to address particular student needs. Assessment of ICT skills is then conducted within the context of achieving particular curricular outcomes and not separately.

School context (school culture, teacher/student mobility, resources, opportunities

Barriers to implementing the IMYM model
A school principal states that it is not possible to claim 100% success in implementing the IMYM model. Because of their own teaching/learning style, some teachers still feel more comfortable and 'in control' of their classrooms when they are providing direct instruction. The school supports these teachers in taking small steps in the implementation of the IMYM model, but if necessary it can also gradually transfer teachers with those who espouse the school's student-centred practices. Student responsibility has been made a core value in an IMYM school. IMYM schools also recognize and celebrate small successes that provide a basis for continued experimentation.

Overcoming teacher resistance to change can be done through example. When highly respected colleagues demonstrate their successes and when parents and students begin to experience the joys of active, collaborative learning, some of this resistance is reduced.

One of the benefits of the IMYM model is the influence it has on non-IMYM teachers. A principal in an IMYM school observes, "We see IMYM as being a model that will help other teachers to become involved in integrating technology in their classroom practice. When it comes to attitudes about technology, the IMYM model has gone a long way in our school to creating a positive attitude. In the community, parents see this as a positive initiative; they've been very interested in what is going on here. Parents of children in the IMYM classroom felt that their children received an additional benefit from the educational system."

Finances have been identified as a critical system-level barrier to doing new and innovative things in the classroom. The financial barriers are related to providing substitute teachers to allow teaching staff to learn new strategies. Even when the money is available, the substitute teachers may not be available, especially in rural areas or in specialty areas like French immersion or science. Class sizes and small-sized classrooms can make collaborative learning difficult to manage, and computers difficult to install (there simply isn't enough room). Timetabling for common preparation time is also related to finances. Funding for time for teachers to learn about and experiment with new pedagogy is the most common systematic barrier."

Another barrier to expanding the use of the IMYM approach is a school culture of many subject matter experts teaching a single class, instead of a middle years culture of fewer teachers per class. The belief that computers should be located in a lab instead of in the classroom, the belief that technology should be taught as a separate subject instead of integrated into curriculum and the belief that only specialist teachers should teach the use of technology are also challenges that need to be faced when implementing the IMYM model.

Support for the IMYM Model: leadership, modelling, collaboration and resources
Leadership from the principal and superintendent is necessary to support any school-based change. In implementing the IMYM approach, this takes the form of creating teaching teams by means of appropriate scheduling and of time tabling to allow common preparation times that can be used by those teaching teams for planning purposes. Support of web-based professional learning can include creative timetabling, covering classes, and providing substitute teachers when required. Superintendents and principals can also raise the profile

of the initiative and create a culture where experimenting with promising teaching practices is valued. When considering the integration of ICT in their classrooms, teachers need to be assured of adequate and timely technical support as well as the support of administrators during the inevitable rough spots that will occur. Most importantly, teachers need to be convinced that the new strategy will benefit their students directly.

IMYM teachers suggest that an effective strategy for extending the IMYM approach to other classrooms/schools is modelling the approach to colleagues and creating a learning community of practicing teachers to act as a support group. A benefit to extending the IMYM approach to the entire school/division is the opportunity for articulation between grade levels in order to create a continuum of ICT skill acquisition throughout the middle years.

The IMYM model promotes greater collaboration between classrooms, as teachers begin to leverage hardware resources across classrooms. Teachers use some of their planning periods to team teach with colleagues, or to work with students from another class on related interdisciplinary units. IMYM teachers have their students "train" non-IMYM teachers and their students in the use of ICT. Students move freely to other classrooms to collaborate, and teachers "swap" students as part of an interdisciplinary or multi-grade activity.

Professional learning and capacity building for IMYM teachers
IMYM teachers express a need for their professional learning experiences to model the strategies they are expected to use in their classrooms. For this reason, effective professional learning experiences for IMYM teachers involve active learning, collaborative learning, scaffolding, and mentoring. Teachers are involved in a series of professional learning sessions, with time between to experiment in their classrooms with the techniques and strategies modelled in their professional learning. Professional learning is provided both face-to-face and online.

There is an IMYM professional learning Web site[1], professional learning CD rom, online professional learning courses, and five IMYM list serves that support the IMYM Learning Community. Provincial orientation sessions and workshops on IMYM can be found in the Workshop Registration System database http://www2.edu.gov.mb.ca/ks4/proflearn/calendar/. Manitoba Education, Citizenship and Youth (MECY) also responds to requests from individual schools and school divisions for face-to-face IMYM professional learning opportunities on site. MECY is currently operating STAPLE, a pilot project for online professional learning. The Strategic Technology-Assisted Professional Learning Environment is designed to increase the availability and flexibility of professional learning for Manitoba teachers. The IMYM model is the content for this online professional learning pilot project. MECY is also developing a Professional Learning Model in conjunction with stakeholders and partners such as the Manitoba Teachers' Society, the Manitoba Association of School Superintendents, and the Manitoba Council for School Leadership.

IMYM teachers, for example, learn about formative assessment during their professional learning sessions. These professional learning sessions take two forms. They may be a

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[1] http://www.edu.gov.mb.ca/ks4/tech/imym/workshops/index.html

series of four face to face sessions over four to six months with time between sessions to practice new strategies in their classrooms and to collaborate with other teachers in their school division grade group. Or, teachers may enroll in web-based courses on implementing the IMYM model. These web-based courses take place in the STAPLE environment over a six month period. STAPLE uses WebCT to deliver professional learning to a diverse group of teachers located around the province. This group of teachers also collaborates and shares using online discussion groups even though they are not in the same school or school division.

To develop their skills, middle years teachers are exposed to the IMYM model through classroom visitations to IMYM classrooms, through information on the IMYM Web site, and through viewing IMYM training videos. After a first exposure, teachers are involved either in a series of face-to-face professional learning sessions as part of divisional implementation, or in online professional learning as part of a distributed learning community spread throughout Manitoba. IMYM professional learning models the IMYM classroom approach and takes place over half of a school year. IMYM teachers learn and practice the methodology within a supportive learning community and not individually.

IMYM teachers are provided with a variety of assessment tools, including checklists, rubrics, and written tests. They also use a variety of assessment strategies, including portfolios, performance tasks, observations, and conferencing. The use of these assessment tools and strategies and their role in formative assessment are highlighted through professional learning experiences as an IMYM teacher. In addition, attention is focused on IMYM teachers' use of language to support the intellectual and personal development of each student (i.e., focusing comments on the quality of the behaviour or the product and not on the personality of the student).

The professional development opportunities afforded by IMYM training include providing training in technology skills to teachers, followed by an opportunity to apply these skills in the classroom with students. Through their IMYM professional experiences, teachers learn to integrate technology daily in the classroom, enabling them to differentiate instruction effectively to better meet the needs of students.

Each IMYM teacher develops his/her own annual professional learning plan. The goals of their plan are both individual and school-based. School-based initiatives are supported by professional development onsite and in the classroom. Students are a part of this action research. The principal ensures release time for teachers, schedules for common prep time for teaching teams, and supports teachers engaging in online professional learning. Teachers committing to specific changes in classroom practice as outlined in the IMYM model are provided with online classroom computers, e-mail accounts and web space for all students and teachers. Teachers are also provided with four days of professional learning over 4 months and are paired with a mentor teacher experienced in the IMYM model. Teachers can 'earn' extra classroom resources through monies obtained from the Grass Roots online projects.

Evaluation

Educational research and development in Manitoba is supported by priority number 6 of *the K-S4 Agenda for Student Success – Linking Policy and Practice to Research and Evidence* http://www.edu.gov.mb.ca/ks4/agenda/priority6.html. Research links to key national and international research organizations are available on the Department's Web site. Partnership research is being supported among universities, school divisions, schools and MEY. Manitoba Education and Youth sponsors research forums, symposia and workshops related to provincial research needs and interests. Approaches to improved exchange of data and information to support research activities are being developed. MEY has also started to identify and conduct formal evaluations of programs and policies through a consultative approach with the field. Research finding are disseminated to schools and to the community using the MEY Web site http://www.edu.gov.mb.ca/ks4/index.html and by published documents such as parent reports http://www.edu.gov.mb.ca/ks4/assess/publications.html . The IMYM action research is found at http://www.edu.gov.mb.ca/ks4/tech/imym/results/index.html .

Summary

The Interdisciplinary Middle Years Multimedia (IMYM) Model sponsored by Manitoba Education, Citizenship and Youth is an example of a curriculum-integrated approach that demonstrates appropriate integration of foundation skill areas that enhances teaching, learning, and assessment at each grade level of the Middle Years. It shifts the role of the teacher from a disseminator of information to a facilitator of active learning and it provides teachers with additional resources and modes of delivery to differentiate instruction.

As Bill Yaworski, IMYM Principal, puts it: "*Our IMYM classrooms have become exciting incubators for learning and collaboration, where a sense of a partnership for learning prevails. Teachers tell us that students' work is at a higher level and that discipline problems have diminished. Indeed, some teachers confide that they are enjoying teaching again for the first time in many years. We had to learn how to learn again, and we did it, and we loved it. We have become a community of learners, and we've passed this love of learning on to students. Now they have become a community of learners too.*"

NEWFOUNDLAND AND LABRADOR

Contextual Framework – Provincial and District policy statements (improving student achievement, student evaluation, formative assessment, teaching and learning strategies)

Improving student achievement
The Department of Education is committed to providing affordable, high quality education to the people of Newfoundland and Labrador so that they can acquire, through lifelong learning, the knowledge, skills, and values essential for both personal growth and societal development. The province envisions an active partnership among communities, community

organizations, and educational institutions that pursues educational excellence and develops learners who are self-reliant and prepared to meet personal and work-related challenges.

Supporting Learning: A Report of the Ministerial Panel on Educational Delivery in the Classroom (2002) put focus on K-12 education, literacy libraries, and early childhood education in order to build a higher quality education system that includes opportunities for students in rural schools. In Newfoundland and Labrador, the curriculum is outcomes based and is designed to achieve the essential graduation learnings. The *Program of Studies* (2002) provides teachers with the intended outcomes, learning resources, and time allotments for all grade levels and areas of study.

The Schools Act (1997) allowed for the development of school councils that now form a critical part of the education system. The school councils provide parents with a voice in the development of policies and practices that, in collaboration with existing structures, enhance school programs and student achievement. As well, the Newfoundland and Labrador Teacher's Association (NLTA) enhances the professional and personal experiences of teachers through support, advocacy and the development and delivery of a variety of programs.

Student evaluation
The Department of Education for the province of Newfoundland and Labrador has published a handbook, *The Evaluation of Students in the Classroom* (1990), that guides student evaluation policy. The handbook asserts that 'evaluation is more than just testing'. Evaluation is also a guide to student learning and should be used on a daily basis to inform teachers and students of student progress rather than only used for making decisions at the end of the school year. The handbook includes guidelines and procedures for the development of tests and the assessment of student performance.

As well, the document, *Principles of Fair Student Assessment Practices for Education in Canada* (1993), enunciates guidelines for developing procedures and protocols for student evaluation. It includes choosing methods for classroom assessment, collecting assessment information, judging and scoring student performance, summarizing and interpreting results, and reporting assessment findings. Reports need to contain the information that will assist and guide students, their parents/guardians, and teachers to take relevant follow-up action.

One facet of the evaluation process is the Criterion-Referenced Tests (CRTs) that measure how well students have achieved the outcomes that are defined by provincial curriculum. They are administered to students at the end of primary, elementary, and intermediate levels of schooling according to a clearly defined schedule. Committees of classroom teachers under the leadership of the Department of Education follow a rigorous process to develop activities and questions to measure how well students are performing. The questions are then reviewed by other teachers to ensure their validity and reliability. Finally, classroom teachers gather two weeks during the summer as a marking board to read and score the students' papers. In addition, a testing program for senior high students consisting of yearly provincial examinations for specific subject areas are developed and administered to students in Grades 11 and/or 12 for student certification purposes.

Through curriculum support, teacher professional development, and improving the teaching and learning process, the CRT program provides high quality service to students, teachers, school administrators, school board office staff, and the public. This is a program that is making a significant difference and generating positive energy about what happens in the classroom, about teaching and learning, and about student welfare and achievement. Students are now performing at a higher level and as a result of this program, teachers are working diligently to use test results as performance indicators and to help students make significant gains in their achievement levels.

Formative assessment
The Department of Education has published a handbook, *The Evaluation of Students in the Classroom* (1990), that guides student evaluation policy. Evaluation is a guide to student learning and should be used on a daily basis to inform teachers and students of student progress rather than using assessment for making decisions at the end of the school year. Policies directly related to formative assessment include the following:
- Student evaluation practices are based on a philosophy of education that respects the uniqueness of each child and should be conducted according to current educational theory and practice. Evaluation refers to the judgement made to determine whether students are meeting the current curriculum outcomes. The evaluation of student progress is a continuous and comprehensive process.
- Evaluation consists of pre-instructional, formative, and summative activities. The most valuable type of assessment occurs during the instructional process. Formative evaluation focuses upon the process as well as the products of learning. Its main function is to document progress and identify impediments to learning so that they can be corrected or remedied as soon as possible. Although the sources of formative evaluation data are varied, a very important source is teacher observation.

Guidelines for teachers to follow when conducting classroom evaluations emphasize:

- use of available sources to determine the strengths and weaknesses of students;
- formative evaluation during instruction;
- appropriate and timely feedback to students and parents;
- focus on curriculum outcomes as outlined in the provincial curriculum.

Teaching and learning strategies
The Newfoundland and Labrador Teacher's Association 's journal, PRISM, acts as a vehicle for the evolution of ideas and encourages teachers to adopt strategies and approaches that are congruent with learners' needs and characteristics. For example, PRISM highlights the use of journal writing, peer mentoring, group discussions, and action research.

The Department of Education's document, *Teaching and learning with Young adolescents* (2001), describes strategies and approaches for learning and teaching that are organized in three sections: teachers as learners, teachers and students as learners, and teachers, students, and the community as learners. These approaches encourage teachers to be creative and

innovative in the pursuit of educational excellence and the adaptation of instruction to accommodate the different stages of student growth and development.

District and school strategic plans (mission statement, goals, and objectives)
The local District school board and community expectations shape the culture at Xavier Junior High School.

As well, the School Council serves as a guiding tool for school administration and staff, concerned parents and members of the community. It consists of the principal, three teachers, three parents, and three community representatives. In sharing its ideas for school plans, goals, improvement strategies and accountability measures, the School Council provides an additional perspective regarding school endeavours. For example, it carefully examines the results of student assessment and advises staff and administration of any concerns pertaining to the school or the students. Furthermore, the School Council plays a major part in school fundraising and volunteering.

The school mission emphasizes student academic achievement and personal growth through meeting curriculum objectives and targeting adolescent learning strategies. The school goals at Xavier grow and evolve with each passing year as teachers and support staff take on greater leadership roles within the school. The school mission included in the School Growth plan states that "Through our unique and enriched curriculum, the mission of Xavier Junior High School is to foster life-long learning skills within the total person so that our students may achieve success in an ever-changing society." The School Growth Plan lists a number of belief statements that have been agreed upon by administration and staff:

- We believe that teachers, parents, students and the community as a whole are part of our educational process.
- We believe our entire school system is committed to promoting excellence in learning.
- We believe the school is receptive to change.
- We believe that learners are unique individuals requiring nurturing to develop their strengths and talents.
- We believe the school is committed to promoting a learning environment that is safe, dynamic, and visionary.
- We believe that learning is an ongoing process.
- We believe that teachers facilitate and enhance individual learning.
- We believe that teaching creates rewarding experiences.
- We believe that parents are an integral part of the educational process.

In addition to these belief statements, staff and administration have agreed upon a number of school goals that will facilitate the best teaching and learning environments for Xavier teachers and their students:

- All teachers will be aware of and meet the instructional curriculum outcomes of the curriculum being taught.
- Teachers will explore varied and non-traditional instructional strategies with a view to adoption of these strategies where educationally sound.
- Teachers will explore varied and non-traditional assessment strategies with a view to

adoption of these strategies where educationally sound.
- Continued improvement of school climate and academic atmosphere will be pursued.
- Our student focus will emphasize a value for education, respect, and a demonstrated pride in their school.
- Our staff focus will emphasize high expectations for student achievement, appropriate decisions on matters involving student instructional time, and various programs to recognize student achievement and success.
- All curriculum areas will be provided with the necessary resources to ensure they can be adequately taught.
- There will be a focus on the reduction of unnecessary absenteeism, on minimizing student disruptiveness in the classroom, and on providing students with training necessary to become life long learners.

Background on what initiated the project

History and Demographics
Xavier Junior High is located in Deer Lake, a small town with a population of approximately 4,700, situated on the West Coast of Newfoundland and Labrador. Xavier Junior High serves the communities of Deer Lake, Reidsville, Cormack, Howley, St. Judes, Wiltondale, and Pynn's Brook . The town of Deer Lake and surrounding communities experienced a number of school transformations before the establishment of Xavier Junior High.

Prior to September 1998, the school system in Newfoundland and Labrador was a publicly funded denominational syste. In the province, schools were operated along three main denominations ─ Roman Catholic, Pentecostal, and Integrated (a combination of other denominations). The original Xavier, St. Francis Xavier Central School, established in 1963, was a Roman Catholic school. Due to declining enrolments, in 1992, Xavier became the Junior High School for both Roman Catholic and integrated students and was renamed St. Francis Xavier High School. In September, 1998, the school system in Newfoundland and Labrador became a public school system and St. Francis Xavier High School became the junior high school for all students in Deer Lake and surrounding area regardless of religion. The school was then renamed as the currently known Xavier Junior High.

Xavier Junior High has a relatively stable population of approximately 294 students, from grades 7 to 9, of a predominately middle class socio-economic background. There are a total of 20 teachers, 3 special education teachers, and 7 support staff (a secretary, 4 janitors, and 2 student assistants) at Xavier Junior High. The school has two official departments, math and language arts, and an unofficial science department.

Road to Improved School Development
Xavier Junior High initially began the arduous road to improve school achievement in March of 1995. The principal of Xavier during this time period requested training sessions on school improvement for three staff members because it was believed that a school improvement plan was necessary if Xavier was to flourish. In May of 1995, staff meetings were held to inform the staff at Xavier of the goal of school improvement and the path that this goal would take.

Description of Xavier school improvement

Inputs

Data gathering and identification of priorities
In an attempt to determine the immediate areas for school improvement, several strategies were initiated. In January 1996, the School Board District Office sent surveys to parents of students attending Xavier Junior High requesting feedback regarding their perceptions of Xavier. While the parents' perceptions of Xavier were satisfactory; they expressed concern with regard to the course options for students, additional academic help for struggling students, and parental involvement in improving student achievement. In addition, Xavier administration conducted an audit by asking teachers to identify areas of key concern. The teaching staff identified the two following priorities: discipline and cafeteria policy.

Identifying barriers
The implementation of the new school development plan has created challenges because the change process inevitably meets with resistance. Those members of staff who are comfortable with their current method of instruction and evaluation need to be convinced of the benefits of the innovative teaching philosophies and creative teaching strategies. The appreciation and support demonstrated by the school leadership team is conducive to the change in the number of teachers willing to try new teaching methods in the classrooms. While there are professional disagreements from time to time between the administration of the school and staff regarding teaching and evaluation methods, a positive relationship exists amplified by a mutual personal and professional respect. To further enhance the educational change process, there seems to be a need for greater awareness of the progress made by staff as well as official acknowledgement of Xavier's achievements.

The time factor has been a barrier to implementing some aspects of the improvement plan. For instance, scheduling collaboration time for teachers requires administrative changes within the school. As well, teachers initially found the new demands on instructional time and the completing of administrative reports (e.g., student referrals, disciplinary forms, etc.) to be restrictive and time consuming. To facilitate positive relationships between staff and students, teachers were encouraged to participate in extracurricular activities. However, individual time constraints were a difficulty in particular cases.

Professional development
Most teacher professional development is done through the school development process and based on identified needs of the teachers. Most staff members try to incorporate what is learned through professional development into their existing classroom instruction and are very supportive of each other when trying out innovative classroom instruction strategies.

Processes
During 1998, staff participated in several school improvement planning sessions with a focus on uncovering existing realities, that is, how students at Xavier were performing academically. After the completion of these sessions, several school development priorities involving curriculum, collaboration, and assessment were identified:

1.   Teachers must complete the provincial curriculum in all subject areas

2.   The school library must be developed
3.   Students' writing skills needed improvement
4.   Collaboration between teachers in the Language Arts department was to be considered a necessity
5.   Mathematics achievement among Xavier students must improve.

As a result, the provincial curriculum is now completed for all subject areas on a year-to-year basis. The school library has undergone numerous changes and improvements are ongoing. Collaboration within the Language Arts department has increased and teachers are sharing strategies and methods of assessment. While the writing skills will not be objectively assessed using the Criterion-Referenced Tests (CRTs) until June 2003, teachers believe that there has been a significant improvement in student writing skills. Furthermore, students at Xavier are performing above district average on the mathematics CRTs. As a result of this improvement, Xavier educational personnel have shifted their focus to concentrate on a specific cohort of students to increase their mathematics performance. In addition, the achievement in science at Xavier has increased 12 - 15% and continues to progress each year.

Outcomes

Key Operational changes from 1995 to 1999
Xavier Junior High School has undergone several administrative changes with the most recent occurring in September of 1999. Since 1995, Xavier Junior High has become a primary focus for the School Board District that initiated the school improvement project. Student achievement at the school has become a priority at both the district and school level. The major concern of the District School Board and educational personnel at Xavier was the students' performance on the CRTs because the school's academic achievement was the lowest in the school district.

Further to the issue of improving academic achievement, staff and administration decided to focus their efforts on time management and discipline issues. To maximize class time for optimal class instruction, staff focused on ensuring that classes started on time and students were ready for class. Teachers and students established classroom rules to facilitate optimal use of class time.

In addition, Xavier efforts were initiated to improve financial record keeping and the physical appearance of the school because the learning setting can facilitate or limit the learning program. For instance, improvements such as a coat of fresh paint and new floor and ceiling tiles enhanced the current professional working and learning environment. Upon commencement of the 1999 school year, a number of improvements to the school had been completed or were in progress:

- A new P. A (public address) system was installed
- A new master key system for the school
- An improved office furniture system
- An improved staff lounge
- A new accounting package was installed to track school finances.

For the 1999 school year, administration and staff agreed that student academic achievement and any strategies that could be implemented to facilitate improvement would be a long-term priority. Several issues that were raised included the use of Criterion Referenced Tests (CRTs) as a method of assessing student achievement, maximizing class instructional time, and student behavioral problems.

Throughout the school year, a number of initiatives were undertaken with the focus of improving student academic achievement:

•   The administration, staff, and support staff agreed that the maintenance of the physical condition and appearance of the school would remain a priority.
•   The school introduced student referral forms so that staff could refer any student who was at risk academically, emotionally, and/or physically for additional support.
•   The current module program was reviewed with the intention of placing academic emphasis on core subjects such as mathematics, science, Language Arts, and French.
•   The students, staff, and parents began collaborating on a draft of a school handbook for Xavier.
•   The staff identified students at risk of failing a core subject after the mid-term reports and letters were sent home to parents of those children who were academically at risk.
•   A student awards night was planned as a means of motivating students and recognizing student achievement and student involvement in school life.
•   The issue of student absenteeism was identified as a concern among staff and practices were put into place to involve parents in reducing the prevalence of student absenteeism.
•   The holding of professional development days focused on the review of current student performance on both classroom and CRTs assessments/evaluations with a view to improving school performance. Staff agreed that changes regarding student assessment needed to be made.
•   The identification of students at risk of failing occurred a second time during the school year, in April, so that staff could intervene to help change the direction in which the student might be headed.

Instructional and assessment changes from 2000 to 2003
Changes at the school, during the 2000-2001 school year, emphasized the growth of CRT achievement and the enhancement of staff collaboration. To achieve this growth, several practices were implemented during the school year:

•   A continued emphasis on the physical condition of the school.
•   An assurance to staff by the administration that it encouraged and supported all Professional Development endeavors.
•   The renewed emphasis by staff on the priority of student academic achievement and the reiteration of this message to parents during meetings.
•   The staff and administration's re-identification of the classroom management issue and their agreement on more autonomy in the classroom with regard to discipline and less tolerance for student misbehaviour. To deal with their concerns that students lacked an appropriate level of respect for self, peers, school, or community and to improve student behavior, the staff initiated a "Respect Day" to encourage respect

among the student body.
*   The establishment of a School Growth Plan committee and agreement by staff that their professional development attendance would be in direct relation to the objectives of the proposed School Growth Plan.
*   The invitation to the District Program Specialists to talk with staff regarding middle school philosophy and new instructional strategies.
*   The staff facilitation of student motivation through the distribution of merit stickers and certificates, as rewards for high academic achievement and participation in school life, with final report cards at the end of the school year.

During the 2001-2002 school year, administration and staff continued to place emphasis on assessing student achievement. Administration regularly met with the head of the mathematics department to facilitate the process of introducing school designed CRTs during the middle of the school year and at the year's end to complement the School Board's CRTs. The impetus of this initiative was to enhance the achievement rates of students in mathematics. The mathematics staff at Xavier decided that it was important to know where teachers were succeeding in relation to student progress and where they needed to concentrate their efforts.

Further to this issue, it was decided that students would take mathematics' CRTs and Grade 9 Language Arts exams in December prior to the Christmas break rather than in January. The change in the administration of the CRTs made it less onerous for teachers to maintain the attention and focus of the students on school tasks until the commencement of the school break. Secondly, the early administration of the tests provided staff with an opportunity to analyze the test scores and know the students' level of academic performance before the next term began. This strategy allowed the staff to collect the information that was necessary to make appropriate modifications to course instruction and identify those students that may be academically at risk.

Another initiative that was implemented during this school year was the introduction of staff sharing by administration. The focus of staff sharing is to encourage staff to share their own personal teaching strategies and instructional ideas with their colleagues. This process enhances learning among staff and provides insight into the different modes of instruction taking place in other classrooms.

For the current 2002 - 2003 school year, administration and staff agreed on the continuation and the addition of school improvement goals:

*   The continued emphasis on staff developing as a professional learning community.
*   The continued emphasis on the positive growth of CRT results.
*   The continued emphasis on the improvements in the area of technology.
*   The continued improvement of the physical condition of the school.
*   The introduction of guidance programs for students such as "Wellness Days" and student portfolio writing.

In addition, improvements in the science department are ongoing. The department is not currently utilizing CRTs to assess student performance in Science. However, greater effort has been made to relate all classroom testing to instructional objectives. Grade 8 and 9 science teachers have been involved in a District initiative 'Teacher Appraisal and Growth' with a focus on enhancing the existing science department at Xavier.

The major focus on core subjects highlights the school's continued emphasis on academic success. Members of the staff continue to assist in the construction of the district CRT for Grade 9 mathematics and the acting science department head continues to assist in the development of the district science CRTs. The head of the Language department continues to focus on understanding the expectations for the Junior High School Language Arts' program and preparing students and staff for assessment. Furthermore, the French teacher continues to focus on understanding the French CRTs and preparing Xavier students for assessment.

Evaluation

The primary focus of administration, staff, students, and parents at Xavier continues to be student academic achievement. Students' CRT scores have improved dramatically at Xavier since the school development initiative has taken hold. Xavier Junior High is currently reflecting a high quality of student achievement and is currently at the top of district achievement for Grades 7, 8 and 9 students.

Xavier Junior High is held in high regard within the community. School volunteers feel good about being part of the school and feel that staff, administration, and students appreciate their support and their time. The School Council believes that the outstanding interaction between teachers, students, and parents contributes to a very positive, warm, and nurturing atmosphere.

Findings of the study [2]

A range of assessment methods
The teaching staff have developed a stronger professional interest in formative assessment for learning. The analysis of data has made teachers aware of whole classroom as well as individual student learning needs.

School-designed mathematics tests at all grade levels, tied directly to curriculum outcomes, are used at mid year and at year end as a complement to the School Board Criterion Referenced Tests (CRT's). These and other tests are kept in a test bank to which each teacher has access, assisting in informing teaching practice. The systematic use of data to change practice at the classroom level and in the work with individual students shows a strong commitment to formative assessment.

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[2] Forthcoming OECD publication (ISBN: 9264007393): *Improving Learning through Formative Assessment: Cases, Policies, Research*, OECD, 2005.

Teachers now make more use of reflective journal writing, rubrics and portfolios than they did five years ago. A culture of peer tutoring is clearly visible in the school. Students work in pairs and support each other in English, in mathematics and in science lessons.

Students with disabilities seem to be well integrated in the Xavier School in Newfoundland. During a math lesson, a special needs teacher in charge of 13 students comes into the classroom to provide the additional support that one particular student needs for his mathematics learning. In addition, there is after-school tutoring for students who have problems getting their homework done without extra help.

The school's philosophy that every adolescent is different and everyone can learn has greatly contributed to an ethos of equity and inclusion. This philosophy obviously works for the students. An ethos of dealing positively with difference makes it okay for students with learning disabilities to have a special tutor come in.

The school's greatest gains have been in academic achievement. Now teachers place a much greater emphasis on curriculum outcomes and pay more attention to the weakest students. Analysing assessment data has become the focus of professional training during the so-called "school growth days".

Staff members of Xavier school report that they are using a lot of synergies they were hardly aware of five years ago. Most of the teachers now also know each other better on a social basis, and meet with each other outside the school. Those friendships have contributed to the school's strong team ethos developed in recent years. A culture of recognition now permeates the school. The school administration acknowledges teachers' creativity and efforts. Teachers put activity sheets and other didactical material they use in their lessons into each others' mailboxes and discuss strategies they use to teach particular content with colleagues teaching the same or similar subjects.

Both students and teachers notice that most of the school's change has taken place with regard to the understanding of what "success" actually means. A few years ago, teachers asked "Who is our top student?" Now, each student is judged individually on a criterion-referenced basis rather than a norm-referenced basis. "Teachers notice how much effort you have put in, how you have improved based on where you were before," reports a student.

Parent involvement in the school has also improved over the past years. As a parent representative reports: "You can come into the school and the staff room any time and are welcomed." The new emphasis on formative assessment has contributed to an improved understanding of learning among parents. The parent representative points out how much she and other parents like to read the comments that are now frequently written onto students' work. "They inform our own behaviour as parents. We can better help our children learn, because knowing the rubric we know what is considered good quality."

ONTARIO

Contextual Framework – Provincial and district policy statements (improving student achievement, student evaluation, formative assessment, teaching and learning strategies)

Improving student achievement
From 1997 to 2003, the Ministry of Education has published and implemented a new curriculum for Ontario elementary and secondary schools that establishes high, internationally competitive standards of education for students across the province. The curriculum has been designed with the goal of ensuring that graduates from Ontario secondary schools are well prepared to lead satisfying productive lives and to compete successfully in a global economy and a rapidly changing world.

The Ontario Curriculum outlines clear and detailed curriculum expectations – that is, the particular knowledge and skills students are expected to acquire and demonstrate by the end of each grade or course. In addition, it provides detailed descriptions of achievement levels, which assist teachers in their assessment and evaluation of students' work and promotes consistency in these practices in schools across Ontario. Teachers are expected to design classroom programs to help students achieve the curriculum expectations.

An *Individual Education Plan* (IEP) must be developed for every student who is identified as exceptional. The IEP outlines how the school will help the student achieve the expectations through appropriate special education and services. Additional programs such as *English As a Second Language* and *Actualisation linguistique en français* support the learning of English and French, enabling newly arrived students to gain proficiency in the language of instruction and achieve the curriculum expectations in all subjects and at all grade levels.

Student evaluation
A well-designed system of assessment, evaluation, and reporting based on clearly stated curriculum expectations and achievement criteria allows teachers to focus on high standards of achievement for all students and promotes consistency in these practices across Ontario.

At the provincial level, the Education Quality and Accountability Office (EQAO) designs and implements a comprehensive program of student assessment for specific subjects and grade levels within government-established parameters. It promotes research in best practices in assessment and accountability. As well, it reports to the Minister, the public, and the education community on assessment and evaluation issues and makes recommendations for improvement.

At the school level, teachers base their assessment and evaluation practices on the provincial curriculum expectations and the achievement levels outlined in the curriculum policy documents for each subject/discipline, the *Guides to the Provincial Report Card* and the document entitled *Program Planning and Assessment: The Ontario Curriculum, Grades 9 to 12* (2000). The achievement chart, organized in four broad categories, provides a province-wide reference point for teachers to use for all assessment practices and a framework within which to assess and evaluate student achievement. The *Provincial Report Card* is used to communicate student achievement formally to students and parents and strengthens the policy for evaluating student work related to the four levels of achievement.

Formative assessment
The primary purpose of assessment and evaluation is to improve student learning. Information gathered through assessment helps teachers to determine students' strengths and weaknesses in their achievement of the curriculum expectations. This information also serves to guide teachers in adapting curriculum and instructional approaches to students' needs and in assessing the overall effectiveness of programs and classrooms practices.

The Ministry of Education is providing a variety of materials and in-service to assist teachers in supporting student learning and improving formative assessment. This assistance is realized in the form of assessment videos and curriculum and assessment support materials such as the *Ontario Curriculum Exemplars* developed by the Ministry of Education with the participation of Ontario teachers. These samples of student work at each level of achievement in particular subjects/disciplines are provided for teacher, parent, and student use. The Exemplars support teachers in assessing student performance and providing feedback to students. The criteria and the student samples assist students in understanding high quality work and what steps are necessary to improve performance. The Exemplars help students to look at their work and set targets focused on improvement. Teachers use the Exemplars to show what high quality work looks like and plan how a student gets to a next level.

Teaching and learning strategies
The *Ontario Curriculum Exemplars* also illustrate the rich student performance tasks and teaching and learning strategies used in their development. They have contributed to the growth of communities of learners working within the project and to the expansion of instructional and assessment repertoires of teachers across the province.
Secondary School Course Profiles for grades 9 to 12 are sample courses of study that are a non-mandated approach to the teaching of a course. Written by teachers for teachers, they serve as a framework on which to build the instructional and the assessment plan required for the implementation of *The Ontario Curriculum*. Accordingly, the sample units and activities include the learning expectations, the assessment, and the teaching/learning strategies that need to be addressed to support student learning. Suggestions in the Course Profiles are to be considered in the context of the local circumstances with respect to time and resources and should be adapted to fit each teacher's individualized program, which is designed to meet the needs of the students in particular classrooms. Teaching units are also available for the elementary curriculum in the electronic curriculum planner.

The development of the Ministry of Education funded support materials is of significant benefit to the District School Boards and teachers who participate in these valuable projects. The professional dialogue focuses teachers on what is really important in instruction and assessment and provides an opportunity for self-reflection and the sharing of strategies.

QUEBEC

Contextual framework – Policy statements at the provincial and the school board levels (improvement of learning, evaluation of student learning, formative assessment, teaching strategies, and learning strategies)

Improvement of learning

The policy statement *L'école tout un programme (1997)* sets out the major orientations of the ongoing education reform in Quebec and defines the mission of schools as being to instruct, to socialize, and to qualify each student. The policy focuses on school success and the social integration of all students without lowering standards and thresholds. Three main official documents inform official practices to renew curriculum at the preschool and elementary levels and at secondary cycle one: *Programme de formation de l'école québécoise, éducation préscolaire et enseignement primaire* (2001)*, Programme de formation de l'école québécoise, enseignement secondaire, 1er cycle* (2004), and *Politique d'évaluation des apprentissages* (2003).

L'école tout un programme prescribes an education program centred on the key learnings required by students in the early 21st century, as well as a diversification of streams, especially at secondary cycle two, to meet each student's specific needs and interests. The document also recommends a more flexible school organization that respects the autonomy of schools as well as the professionals who work in them. Schools would thus be able to offer each student an environment adapted to her or his areas of interest, aptitudes, and needs, thanks to differentiated pedagogy and diverse school streams.

The curriculum document *Programme de formation de l'école québécoise* (2001, 2004) defines essential learnings for youth education at the elementary level and secondary cycle one in two-year learning cycles. The aims of the curriculum revolve around structuring students' personal identity, constructing their world vision and developing their power for action. To meet those needs for youth education in the early 21st century, the curriculum focuses on developing competencies, on learnings anchored in culture, on an active and reflective learning process, and on assessment in the service of learning. The curriculum is designed as a system combining cross-curricular competencies, general areas of education, and learning domains that group disciplines within the same field.

Cross-curricular competencies in general education are nine in number ─ using information, solving problems, using critical judgment, using creative thought, acquiring efficient working methods, using information and communication technology, structuring one's identity, cooperating, and communicating appropriately. These cross-curricular competencies go beyond the borders of subjects, and are developed to the extent that they are worked out throughout school disciplines and activities.

The five general domains of education focus on the major issues that youth must face: well-being, guidance and entrepreneurship, environment and consumerism, the media, and living together and citizenship. These domains are points of convergence that promote the integration of disciplinary learning and ensure continuity of interventions through the educational intent and specific axes for development. They concern different facets of students' needs and serve to anchor the development of cross-curricular competencies and to link school-based learning and daily concerns.

Evaluation of student learning

The document *L'évaluation des apprentissages au préscolaire et au primaire, Cadre de référence* (2002), is mostly intended to help teachers and others involved in the implementation of the *Programme de formation* as they develop assessment practices, by offering a guiding framework. The evaluation of learning is defined as a process of

exercising judgment about learning, based on interpretation and analysis of collected data, in order to make pedagogical and administrative decisions. The *Cadre de référence* offers an overall view of all evaluation guidelines and practices implemented to help reach the objectives of the education reform policy statement: the nature and general functions of evaluation, the components of the act of evaluating, communication with parents and students, and mandatory national tests.

Formative assessment

The *Cadre de reference* sets out the notion of assistance in learning as the central concept of formative assessment, i.e., to support students in acquiring knowledge and developing competencies. Formative assessment must be integrated into a teaching and learning process and play a feedback role. Feedback by teachers on their learning promotes students' progress and can affect different purposes for learning such as the process used, the final outcome, or prior knowledge. It can also be broadened to other aspects of the learning process such as motivation. Feedback on learning by students (self-regulation) leads students gradually to develop their skill in regulating their own learning through metacognitive activity. Students become aware of their learning process and are able to use appropriate strategies to build their knowledge and develop their competencies. Finally, feedback on pedagogical actions orients teachers' pedagogical interventions. By addressing the results of the application of their pedagogical action, teachers can adjust their interventions and planning in order to contribute to progress in students' learning.

Teaching strategies and learning strategies

The *Programme de formation de l'école québécoise* is largely characterized by a decision to develop competencies and by focus on the learning process. It proposes an organization of knowledge focusing on the development of competencies and anchored in meaningful situations. The curriculum defines learning as an active, continuous knowledge construction process. Learning is considered as a personal ownership process based on students' cognitive and emotional resources that is influenced by their cultural environment and social interactions.

This concept of learning requires the creation of differentiated learning and assessment situations meeting education needs while respecting individual differences. These situations take into account students' environment, encourage interactions between peers, and allow students to construct their thought based on their earlier learning, and to exercise a degree of control over their actions. This concept recognizes the place and role of knowledge in the development of disciplinary, interdisciplinary, and cross-curricular competencies.

Interdisciplinarity and a cross-curricular focus invite teachers to implement a new concept of teaching and a new economy of learning that make possible pedagogical cooperation, interdisciplinary collaboration, shared projects, and common activities. The development of competencies and the organization of teaching focused on learning require the entire school team to mobilize around the educational project and acquire a systemic vision of goals for students, in order to make the school a true community of learning. Teachers also collaborate in a cycle team to create favourable conditions for teaching/learning. Finally, teachers are invited on an individual basis to address the development of the competencies required to integrate knowledge and reinvest in diverse situations. Teachers give context to

students' learning in respect of expectations embedded in the program and specify what students should normally master at the end of each cycle.

Strategic plan (mission statement, goals, objectives)

Background on PROTIC

The implementation timeline for the *Programme de formation de l'école québécoise* at the preschool and elementary levels ranged from September 2000 through September 2003, while curriculum reform will be gradually implemented at the five levels of secondary schooling from September 2004 through September 2008. In fact, new notions of teaching/learning are not yet in place at the secondary level. At that level, pedagogical practice is mostly oriented toward the attainment of goals in school subjects.

Given this situation, assessment practices at the secondary level have not yet been recast; they will nonetheless follow the transformation of curriculum, in a continuum with change at the preschool and elementary levels.

However, a few innovative projects have been implemented over the past ten years. The Conseil supérieur de l'éducation[3], in its annual report published in 1999-2000, entitled *Éducation et nouvelles technologies*, highlighted the PROTIC project of the Commission scolaire des Découvreurs under the rubric of Wide-Ranging Projects from Elementary School through to University. At page 156 of this report, the Conseil writes: "PROTIC does not only mean using computers in the classroom; it also means a new pedagogy. Even before education reform, PROTIC designers focused on project-based pedagogy, multidisciplinary and collaborative learning." Indeed, PROTIC is for Quebec an example of successful integration of new technologies in teaching and learning.

The Les Compagnons-de-Cartier secondary school, part of the Commission scolaire des Découvreurs in Sainte-Foy, Quebec, implemented in the fall of 1997 a curriculum focused on integrating information and communication technologies in training part of its students. This program was called PROTIC, and over time, its own pedagogical practices evolved along the axis and orientations imposed by the learning community.

Under PROTIC, in the first year, 64 Secondary I students were selected in two class groups. New class groups were added each year. In 2002–03, the program involved twelve groups from Secondary I through Secondary V, or about 30% of the total enrolment in the Les Compagnons-de-Cartier secondary school. Each student enrolled in PROTIC owns a portable computer equipped with a modem. The portable computer can be paid for over the five years of secondary schooling, and the computers are designed to be durable enough to last their users as long as their secondary studies.

Implementation of an innovative project requires major adaptation at various levels in the organizational structure. The implementation of PROTIC brought about an upheaval in the customary physical and material organization, the organization of work, and the organization of learning. Therefore, the stakeholders who become involved must agree to redefine their

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[3] Le Conseil supérieur de l'éducation is charged with advising the government and ensuring liaison between Quebec citizens and the government in all areas of education from early childhood through to aldulthood.

roles on a regular basis. They must also agree to build a new knowledge based on shared experiences and in light of reflection, dialogue, and retrospective reviews of each others' achievements, as well as based on theoretical frames of reference integrated to a variable extent by each partner.

As early as 1997, stakeholders involved in PROTIC undertook a process of change, especially by implementing socio-constructivist notions and by involving an active and reflective school team to help active and reflective students grow their learning and skills. In response to the needs expressed by its community, PROTIC began a training program focused on integrating new information and communication technologies (ICTs). It gradually became transformed into a community of learning under the influence of the compulsory transition to a knowledge society.

Although PROTIC is stand–alone and distinct from the regular curriculum, it is part of the philosophy underlining the educational project in Les Compagnons-de-Cartier secondary school, whose goals are to develop students at both the cognitive and socio-emotional levels. In addition, annual targets set in the school are based on the school's success plan, in which the ICT-focused program evolves in harmony with the community's values and objectives.

Description of PROTIC

Inputs: Conceptual framework and practical framework for PROTIC
Success for all, with higher thresholds, is one of the challenges that those involved in PROTIC intend to meet. Inspired by research on learning over the past 20 years, the project's designers conceived and combined pedagogical approaches that favour students' active participation in the program. Pedagogical practice within the project is largely rooted in the foundations of socio-constructivism and cognitivism. The primary goal that motivates all those involved in PROTIC, in one place and performing the same activities, is learning. Thanks to networked computers, this "place" can be either physical or virtual. The advantage of learning supported by an ICT environment is that it allows delocalization, and even broadening the community of learning.

In the field, everything tends to revolve around a networked community of learning. The PROTIC classrooms are connected to the Internet using high bandwidth optic fibre. The electronic network acts as a support for information searches and interaction between learners.

Within PROTIC, teaching/learning is based on the project approach, within which school subjects can be advantageously integrated. Projects are chosen based on parameters that focus on curriculum objectives and the interests of the students involved. Once a project is chosen, students get busy looking for required resources, planning and organizing teamwork, both methodologically and in terms of individual contributions. Then come phases of dialogue, discussion, coordination, and syntheses of individually collected data. Finally, each team agrees on the format and type of presentation for the finished work, depending on its intended audience. Throughout the process, students engage in questioning (individually and in teams) of the strategies chosen and corrections required, past and future learnings, and skills already demonstrated and yet to be developed. Once the project is completed, they question themselves again, this time about the entire individual and collective learning process at the cognitive, social, and emotional levels. Projects thus carried out place students

at the centre of complex and meaningful learning situations, during which they must call upon cognitive strategies that allow for in-depth treatment of problems raised in the process of completing the project.

In project-based pedagogy, each student is invited to make an original contribution to further and facilitate her or his own learning as well as those of team members and the rest of the class group. Students can design and perform an activity that allows them to build their knowledge and that will contribute to the collective construction of knowledge. An optional learning activity bank is created to meet the group's ongoing needs as well as fill individual or specific gaps. In this context, students gradually become responsible for the progression of their own learning, in addition to being involved in those of all students in the class.

In this perspective, teachers take on a complex role and perform multiple functions. First and foremost, they must implement conditions favourable to the development of collaboration skills between team members of their class group. In addition, devolving the learning to the students requires teachers to have a complete mastery of learning processes, including the many forms they can take, the many observable signs that denote its accomplishment or lack of accomplishment, and if required, they must also discover any blockages or sources that hinder its harmonious achievement. In short, the teacher's usual role is considerably modified in the community of learning. In this scenario, teachers become attentive guides following each student's progress. In addition, teachers take on the role of mediators, attentive not only to linking students with content to be acquired, but also to linking students collaboratively with other members of the group. Indeed, in PROTIC, teachers cannot act only as learning content experts; they must also call upon their expertise in learning as well as in learning processes and strategies.

Administrators at Les Compagnons-de-Cartier secondary school enjoy a certain latitude in choosing teachers for PROTIC, thanks to amendments to the local teachers' collective agreement. Teachers are chosen based on their interest in adopting project pedagogy and on their desire to integrate ICTs into their teaching practices. Each teacher recruited is responsible for a core subject (French, English, mathematics) twinned with a second subject. In addition, teachers undertake to take charge of a class group to which they teach religious science or morals, methods of intellectual work, and personal and social skills. Teachers devote twelve periods to their class group and twelve periods to a second group. PROTIC teachers are also given additional time: meeting time of at least one lunch hour per cycle of nine teaching days; two 75-minute periods per cycle for one teacher to work on pedagogical development, and four periods per cycle for another teacher to analyze projects throughout the program. Other pedagogical development periods are also provided, adding up to some 100 hours freed up each year for all teachers.

Under PROTIC, human and material resources are organized to serve learning. Designing the classroom as a community of learning requires making a number of changes to traditional frameworks. The subject schedule is decompartmentalized, with 85% of time over one year allotted to interdisciplinary projects. The physical layout of the classroom also becomes important. In this program, each student has a classroom and a specific work space within a work team made up of four students belonging to a class group that includes about thirty learners. Teachers move from one class to another.

Under the influence of Vygotsky, communication and language are used in PROTIC as tools for the development of intelligence. Faced with a situation that gives rise to a problem, students are called upon to communicate their ideas in an organized manner in order to share them until there emerges a construct higher than the one they possessed at the time the situation arose.

To carve out a place and find fulfilment at the cognitive, emotional, and social levels within a community of learning, individuals must display autonomy, a sense of responsibility, participation, and organization as well as creative ability and a spirit of collaboration. Therefore, the selection process for PROTIC students is based on those dimensions, deemed to be essential prerequisites.

Four tools are used to collect information on candidates. The student's school record is allotted a weighting of 15% and is taken into account in order to balance group make-up. In addition, a weighting of 10% is allotted to a student profile created by grade 6 teachers based on criteria related to students' degree of autonomy, social skills, sense of responsibility and commitment, and spirit of collaboration. An admission exam accounts for 75 % of the weighting. This exam includes four tests: written text to measure the quality of language skills and degree of motivation; a series of role plays designed to tease out participants' degree of autonomy, creative capacity, and spirit of collaboration; a daytimer organizing task to evaluate a candidate's sense of organization; and finally a computer-based test to measure knowledge of ICT.

Groups are heterogeneous, based on the belief that individual differences are a source of collective enrichment. The selection of students takes that fact into account and includes: 25% of students with higher-than-average marks at the end of grade 5; 50% with average marks, and 25% with below-average marks. In Secondary I, special attention is paid to each student's integration and mode of operation within the community of learning.

Constructing new knowledge is a collaborative endeavour in which many PROTIC actors are involved, joining their efforts and committing their skills to develop a dynamic learning approach in meeting the new expectations created by a knowledge society in full expansion.

The PROTIC school team, made up of the principal and teachers, is involved in a dynamic of continuing education. Throughout its progress, it works with and is assisted by practicum students from Laval University's initial teacher training programs as well as guidance counsellors from Commission scolaire des Découvreurs. It also receives support from a team of Laval University researchers funded by the Fonds pour la formation des chercheurs et l'aide à la recherche (FCAR).

PROTIC evaluation process

In PROTIC, evaluation is performed in accordance with program goals, which are themselves centred on the principles governing a community of learning. Assessment is seen as a key lever of success for all.

Pedagogy as practised in the program integrates assessment in the dynamic of student learning. It is therefore designed as an essential step in providing feedback to both teaching and learning. In this respect, teachers can inform their decisions and their pedagogical

actions using the project's pedagogical framework, regular observation of progress in learning, and an ongoing analysis of strategies, all in order to provide feedback on learning to the class group, to a team of learners, or to a single student. In the same way, the process of carrying out a project, associated to the context of building collective knowledge, in which they are placed, leads students to become aware of the characteristics of learners by developing metacognitive skills and exercising their critical judgment. The development of students' metacognitive skills is supported by the use of questioning strategies and by assessing learning achievements and the degree of mastery with which students resolve problems encountered in the course of their learning. The development of students' critical judgment is stimulated by activities involving self-assessment, co-assessment (assessment with the teacher), and peer assessment in respect of their own learning process at the cognitive, social, and emotional levels after projects are completed.

This assessment framework gradually bestows autonomy on students, as well as making them responsible for the key conditions they must put in place to ensure the success of their learning. The environment created by the community of learning and project pedagogy provides a key place for assessment and offers an ecology that meets the varied needs of different types of learners. In that sense, PROTIC favours the actualization of each student's potential without lowering thresholds.

The advent of PROTIC within an organizational culture in which traditional approaches are well grounded did create some controversy and required changes to the existing assessment process. For example, in order to harmonize assessment with PROTIC's practices and learning situations, traditional assessment tools (such as standardized pencil and paper tests) used by Les Compagnons-de-Cartier secondary school and Commission scolaire des Découvreurs had to be set aside. The principal, who is responsible for the program, as well as school board education officers and teachers involved in the program, agreed on an evaluation system that meets the requirements of the Commission scolaire des Découvreurs evaluation policy as well as the requirements of specific PROTIC practices.

The assessment system created through this dialogue focuses on the use rather than the reproduction of knowledge. It delves into cognitive and social processes rather than seeking an inventory of items memorized by the learner. The evaluative process is carried out concomitantly with the learning process. First, the team of program teachers from Secondary I through Secondary V plans a student assessment by ensuring progressive coverage of all the elements in subject programs as well as skills related to cross-disciplinary competencies (CCCs) (competencies common to all disciplines and that go beyond the boundaries of knowledge) promoted through teaching within PROTIC. Based on that planning, and working in level-based teams, teachers plan the learning situations and the evaluation situations, integrated or distinct, that they intend students to experience.

In Secondary I, II, and III, the judgment of those responsible for assessment is based on information collected both throughout the learning process and at the end of the school year. This information is largely drawn from the portfolio (in Secondary I and II) or the webfolio (in Secondary III) that tracks progress in subject learning and the development of CCCs. The portfolio also displays the learning and development goals that students set for themselves at the outset, as well as taking stock of the subject learning acquired and the levels of competency attained. Each year in December and May, students are required to communicate orally and formally to their peers and their lead teacher the state of progress of

their learning and the development of their skills, based on the established goals and expectations. As part of this presentation, students are required to set out the roadmap they will follow to reach their goals, to meet program objectives, and to meet expectations expressed by other members of the community of learning. At the end of the school year, a "summative" assessment is carried out via a project that integrates knowledge related to several subjects and requires mobilizing several cognitive, social, and emotional strategies.

The analysis and interpretation of the information recorded are based on criteria described by the teaching team and known to students. Success thresholds are established for the measurement of content for each school subject as well as scales of levels of competencies, to guide their judgments in terms of the CCCs demonstrated by students. The content of the subject assessed is based on provincial curricula and CCCs taken into account in PROTIC, at the intellectual, methodological, personal, and social levels as in communication.

Both the progress in students' learning and the level of development of their CCCs are communicated in two forms, corresponding to two specific aims ─ supporting students and recognizing progress. A summary of learning, intended for students and teachers, is performed formally twice a year, and is also carried out regularly, and more informally, between members of the learner group, teachers and students, focusing on each student's progress in respect of the curriculum's expectations, the needs of the community of learning, and their own learning and development needs. The other form of communication is the report card. This written report informs students but is more specifically targeted to parents, school principals, and other school system stakeholders. It is issued four times a year and contains students' results translated into letters for disciplinary skills throughout the year (A, B, C, D) and a formula (pass/fail) at the end of the school year, with a number from 1 to 4 indicating the degree of development of CCCs.

PROTIC's results

Being connected to the Internet, PROTIC students can communicate between themselves and therefore can collaborate wherever they are, at school, at home, or elsewhere. When faced with a problem situation, they can obtain the assistance they need to overcome the obstacle that hinders the progress of their work by creating small discussion groups or using chatware. This context of collaboration developed within PROTIC escapes the evaluation culture anchored in a more traditional approach that up to very recently dominated Quebec's educational system. In this pedagogical current, the main function of evaluation is ranking individuals rather than recognizing performance and knowledge flowing from a collaborative process. This is why evaluation is the greatest fear of the parents of students enrolled in the program. Since it is organized based on the principles of a community of learning (cooperative approach), formative assessment occupies a key place. For team projects, marks are common to all group members. The work of the entire year is assessed based on the portfolio or webfolio. Progress in learning and evolution in each student's process is of greater interest than individual performance. On report cards, results in a subject are expressed by a letter, from A to D, rather than by a percentage. Parents and other school system stakeholders sometimes feel that PROTIC's evaluation system is insufficiently accurate.

To bridge the gap between PROTIC's system for evaluating learning and the system currently in force under the Politique d'évaluation nationale au secondaire, and given the

importance of decisions taken in the context of school performance assessment for both individuals and the society in general, evaluation within PROTIC is performed in accordance with the legislative and regulatory framework of the Ministry of Education for Secondary IV and V classes. Students in these final two years, their parents and other education system stakeholders receive four annual report cards expressed in percentages. In addition, program evaluation conditions have been adapted to the rules of performance assessment for the final two years of secondary schooling.

The first PROTIC graduating class completed its secondary studies in 2001–02. It is now possible to perform a comparative study of school performance thanks to the administration of standardized ministry assessments to all Quebec students at a given level. These standardized assessments measure student performance in five subjects: science, mathematics, history, French, and English. The results of these standardized written tests show that PROTIC students generally perform above the provincial average and that their success rate is significantly higher than that of other Quebec students.

Table 1: Results for PROTIC students compared to those of other Quebec students (public and private sectors) in percentages on June 2002 standardized written examinations

Table 1										
	Science 056 470		Mathematics 068 436		History 085 414		French 128 510		English 136 524	
	Average final result	Success rate	Average final result	Success rate	Average final result	Success rate	Average final result	Success rate	Average final result	Success rate
PROTIC students	**79.3**	**88.5**	**72.0**	**90.4**	**67.8**	**86.8**	**75.5**	**97.9**	**85.7**	**100**
Other students **(Public and private sectors)**	**76.1**	**85.3**	**69.9**	**79.4**	**69.0**	**77.8**	**71.7**	**81.2**	**82.2**	**95.5**

Source: Commission scolaire des Découvreurs, *June 2002 Examination Session*, **November 2002**

These standardized examinations assess learning achieved in conformity with the provincial curriculum in the subjects concerned. The curriculum is the basic reference for any pedagogical intervention, in terms of both learning and assessment. Curriculum defines the expected outcomes at the end of secondary schooling and provides indications to serve as a reference for assessing learning. Thanks to their prescriptive nature, they allow all Quebec students to receive equivalent schooling and to be assessed based on prescribed content.

PROTIC assessment

The current state of knowledge, despite much effort exerted in the area of research on education science, does not permit a qualitative demonstration nor an unqualified finding that integrating ICTs in teaching/learning and adapting evaluative practices help improve student results at the elementary and secondary levels. However, many reports frequently refer to the qualitative transformations achieved thanks to that process. Among positive results observed in studies and found in many research reports are: changes to teaching modes, strategies and scenarios; different conceptualizations of learning; increased interest and motivation;

increased collaboration between teachers and learners; more sustained effort; more individualized coaching and follow-up of students; etc. In other words, current research indicates that access to computer equipment does not in itself guarantee better learning, but often brings about changes that do.   At the end of this study on PROTIC, we attempted to assert that the implementation of project-based pedagogy, assisted by portable computers and evolving within a community of learning structure, meets the needs of secondary level students who are called upon to play an active role in the knowledge society. In the absence of abundant, varied, and reliable data collected over a lengthy period, we can only examine changes brought about by the program among three principal actors: students, teachers, and parents.

The effects of the program on students are addressed in a study by Frédéric Legault of Université du Québec à Montréal and Thérèse Laferrière of Laval University (Quebec City), presented in spring 2002 at the Pan-Canadian Education Research Agenda Symposium. This study is available at www.cmec.ca and specifically deals with the repercussions of the implementation of PROTIC on the pedagogical organization of the classroom, learning strategies adopted by students, the degree to which students' needs are met, as well as their choice of school goals, motivational beliefs, and commitment. Six class groups belonging to three different contexts were involved: two PROTIC groups, two enriched groups (Programme d'éducation internationale), and two regular groups. The six groups included 182 Secondary III students who answered data collection questionnaires.

The data imply that PROTIC students have a different relationship to learning, assessment, and school in general than students in the enriched and regular programs.   PROTIC students learn by collaborating and investigating to a greater extent than those in the other study groups. In addition, analysis shows that the learning strategies adopted vary significantly depending on the pedagogical context. Major differences are connected to the following indicators: knowledge construction strategies, in-depth treatment of content and self-regulation, on which PROTIC students surpass students in other classes. The results imply that PROTIC enhances the relationship between students and learning.

Analysis of students' school goals shows their perceptions of the aims of schooling. PROTIC classes stand out in that students pursue goals focusing on mastering content rather than on performance or avoiding difficulty. From data on school aims, it is apparent that PROTIC students see school as a place to master learning, rather than as a locus of performance or competition between individuals. In conclusion, still according to Legault et Laferrière (2002), students participating in PROTIC develop feelings of belonging, freedom, and empowerment to a greater extent than students in other programs, and therefore enjoy school more.

While PROTIC engenders qualitative changes in students, it also brings about gradual, in-depth changes in the professional practices of teachers. Indeed, the pedagogy of PROTIC revolutionizes the very concept of teaching and learning. Teachers play a different role with students, based on a different design. They build that role by developing new methods grounded in new pedagogical approaches and new conceptual frameworks. These new approaches encourage teachers to create new learning and assessment situations adapted to students' needs and interests. Thus, teachers gradually change their relationships with learning, teaching, students, their colleagues, and their professional role.

Parents of students, the last stakeholders to join actively the community of learning, are timidly starting to adhere to a networked culture and to cooperate as resource persons in building collective knowledge. This participation by parents, although discreet, is an additional step in broadening the community of learning, which enhances the participation of PROTIC in the project *L'école éloignée en réseau*, in which students enrolled in a remote-area school build their knowledge actively in cooperation with PROTIC students.

The applicability of the study's conclusions are limited by the very small number of class groups and individuals involved. Its scope is all the more restricted in that it cannot rely on nor compare itself with other studies that could enrich it. However, the analysis informed by observation in teaching/learning situations and the reflections and research it engenders show that over five years, PROTIC has brought about a major transformation in professional, pedagogical, and management practices. Although the kind of secondary school envisioned in Quebec's educational reform is still far off, PROTIC gives us the hope that it is becoming closer and especially that it must exist for the benefit of all stakeholders who devote so much daily effort to this goal.

Conclusions of the study[4]

Teaching within PROTIC systematically revolves around interdisciplinary projects. One of the methods used involves collaborative group exploration.

PROTIC classes leverage ICTs in a very diverse manner. In language arts, ICTs are used mostly for research, word processing, and publication of projects, while science and mathematics projects use computers to analyze data from scientific experiments.

The atmosphere in the classroom resembles that of a newsroom or a corporate environment. There is a lot of talking, but generally very disciplined. Teachers walk through the classroom, spending time with students, individually or in groups, checking work, requesting clarifications and providing feedback on the quality of the written material. The volume of direct teaching is very limited during the class. Fifteen minutes before the end of each 75-minute period, students in a group exchange the knowledge they have acquired during the classroom, address pending issues, and design a process to continue their progress.

Communication continues beyond the classroom. Students take their laptop home, where they have access to a common Internet platform. Electronic communication forces students to be as specific as possible in their contribution to a shared work process. When students' writing is too imprecise, the others in their group, or a teacher, will request clarification or additional details through the Internet forum.

Significant student autonomy

At the beginning of each project, students identify their personal learning objectives within the framework provided. Every nine days, they are asked to perform individual reflection on the progress in their learning. They write a report commenting on their individual learning,

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[4] Forthcoming OECD publication (ISBN: 9264007393): *Improving Learning through Formative Assessment: Cases, Policies, Research*, OECD, 2005.

group learning, and the point they have reached in respect to their own objectives and program objectives. This written report is the key element in PROTIC assessment, creating a trail that can be used subsequently to make choices or to plan or analyze other methods. Students largely manage their own learning process.

Group work is structured through positive interdependency. In order for the group to reach a higher level of expertise, each member must successfully pass a test. In order to improve the work of the team, students obtain feedback on their teamwork through a criteria-based checklist supplied by the teacher. Every student makes about twenty presentations a year, with feedback from other students based on criteria established by the teacher.

Students also have a learning portfolio, a dossier in which they keep major items of their work. Teachers regularly review electronic portfolios and comment on the quality of the work, strong points, and areas for development or improvement. Many parents also take interest in their children's electronic dossiers.

Students receive a written assessment four times a year in the form of a report card. Three of those reports have a purely formative nature and contain comments on students' work on various areas. Only the year's fourth report is summative and indicates whether students have successfully completed the year. Cross-curricular competencies such as organization skills, the use of technology, communication skills, and social skills are also assessed in that report card.

At the beginning, most students do not display the degree of autonomy expected of them, since they had been guided and oriented to a much greater extent in their earlier schools. However, after performing a number of projects, they begin to plan their own learning much more easily.

Students visibly enjoy working in PROTIC's learning context.

A common language in teaching and learning

Separate interviews with students and teachers clearly show that they use the same terms to discuss processes associated with teaching and learning. Even the youngest students use terms such as metacognition, self-assessment, self-regulation, and peer evaluation to describe their learning. Students appear to be familiar with their mode of learning and to understand it well. It goes without saying that PROTIC teachers awaken their students to the dynamics of learning.

Role of teachers

Teaching within PROTIC is distinct from teaching as presented in the university teacher training curriculum. Teachers have access to *Knowledge Forum*, an electronic platform used by students to archive and discuss their work in progress around the clock. The software allows teachers to answer students or groups of students electronically. Students report that their teachers are very flexible. Teachers allow students to work alone most of the time, but they sometimes spend half an hour or more with a specific student who needs help. Given

the high degree of autonomy in the class, this amount of contact time with the teacher appears to be sufficient. Students do not report that they feel left to themselves.

Most teachers who have applied for and been selected to teach in PROTIC felt that the school system did not provide them with sufficient opportunity to experiment or situations conducive to professional development. They chose PROTIC, among other reasons, because of the many prospects for continuing learning that the program offers.

Teachers share offices located between two classrooms. They can work together several times a day, often very informally. They frequently spend the day planning new multidisciplinary projects. They are proud of their sense of collaboration.

Over the past few years, PROTIC students have obtained excellent results in ministry examinations. Teachers and administrators see this as evidence that the model works. The PROTIC pedagogy has had a considerable impact on the professional practice of other teachers, professional staff, and school principals at Les Compagnons-de-Cartier school, but the impact has been limited on the four other secondary schools within the jurisdiction of the Commission scolaire des Découvreurs. Most visitors are from universities or other school districts within Quebec or Canada. PROTIC deliberately focuses on the acquisition of cross-disciplinary competencies and metacognitive competencies, two areas stressed by PROTIC in this period of provincial curriculum reform; and the program is expected to be more and more accepted by the public.

Since 2002, PROTIC has been economically independent and only requests modest assistance from the Commission scolaire des Découvreurs. This was sought by teachers, who wanted greater autonomy.   PROTIC now has close contacts with neighbouring Laval University, and hosts many practicum students in education, some from as far away as France. Since the fall of 2004, an elementary school has been working with Les Compagnons-de-Cartier school and has adopted PROTIC pedagogy. Those students will be able to practise learning based on team projects throughout their compulsory schooling.

SASKATCHEWAN

Contextual Framework – Provincial and district policy statements (improving student achievement, student evaluation, formative assessment, teaching and learning strategies)

Improving student achievement
Saskatchewan Education recognizes the diversity of student needs and aims to maximize all students' learning through the Core Curriculum (1991) policy framework. The Six Common Essential Learnings, the Required Areas of Study, the Adaptive Dimensions are integral components of the Core Curriculum that each contributes to improve student achievement.

- The Six Common Essential Learnings (C.E.L.s) are a set of interrelated areas containing understandings, values, skills and processes considered important as foundations for learning in all school subjects: communication, numeracy, critical and creative thinking, technological literacy, personal and social values and skills and

independent learning. They represent the kinds of teaching practices that are needed and the kinds of understandings the province wishes to develop in its students.

- The Required Areas of Study develop the C.E.L.s and direct curriculum content and instruction in ways that provide students with an integrated and meaningful knowledge base as well as the understanding and processes necessary to achieve personal autonomy and compassion for others.

- The Adaptive Dimension in Core Curriculum addresses the foundational beliefs about the teaching-learning process that led to the C.E.L.s and the meeting of student and societal needs. It refers to the concept of making adjustments in approved educational programs to accommodate diversity in student learning needs. It includes those practices the teacher undertakes to make curriculum, instruction and the learning environment meaningful and appropriate for each student.

Student evaluation

Saskatchewan Education prepared the document, *Student Evaluation: A Teacher Handbook* (1991), as a means of providing continuing education and professional development opportunities for all teachers to support the improvement of their capabilities in the evaluation of student achievement and progress and in the diagnosis of student learning needs. It is designed for use in in-service activities as an integral part of teachers' consolidating their conceptual knowledge about student evaluation and expanding their range of techniques of student evaluation to help assess forms of procedural knowledge that transcend specific subject-areas. It gives teachers the tools needed to develop and implement a well-planned student evaluation program that uses assessment techniques for formative, diagnostic and summative purposes, meets accountability pressures from students, parents/guardians and the public at large and is an integral part of good teaching practice that influences decision making and guides student learning.

Formative assessment

Formative assessment is intended to provide information for both teacher and student about the progress of that student so that corrective action may be taken to help achieve the desired learning outcome. It requires the teacher to attend to the learner, the learning task and the learning environment in optimizing learning. The concept of continuous progress is intrinsic to formative assessment. It underlies the need to adapt all approved curricula to meet individual needs through the Adaptive Dimension that applies to all regular, modified and alternative education programs.

The first step involves the assessment and evaluation of the needs of all students relative to the approved curriculum. The teachers begin by using a wide-angled approach to classroom instruction, uniformly applying decisions about curriculum content, instructional practices and the learning environment to all students. As a result of this initial assessment, the teacher has an opportunity to make adjustments for those students who require an adaptation. Through the decision-making process, a teacher may next decide to make further adaptations and teach differentially toward stated foundational objectives for small groups of students to improve opportunities to help them meet identified learning objectives. Lastly, diagnostic and formative assessment of individual student learning may indicate to the teacher that additional adaptations are needed for the student to meet the formally stated curricular objectives.

Effective assessment should lead to the establishment of a student performance baseline. Instead of measuring students' progress according to a set of predetermined criteria for a specific grade level, progress for each learner is measured against the student's performance baseline. This approach to assessment reduces the potential for negative consequences associated with competition and comparisons between students within the classroom**.** It encourages teachers to focus on individual needs and individual progress.

Teaching and learning strategies
The document, *Instructional Approaches: A Framework for Professional Practice (1991),* was developed to support professional development for the Core Curriculum and the incorporation of the C.E.L.s and the Adaptive Dimension through instruction. The Core Curriculum model was developed to align curriculum and instruction, to achieve fluency in scope and sequence from kindergarten to grade twelve and to accommodate all stages of student growth and development. It is founded on the following beliefs that:

- Effective instruction can be defined and described and that instructional practice can be improved through staff development programs that encourage teachers to be reflective practitioners;
- Educators need to achieve the balance between the art and the science of teaching;
- Teachers should have a sound knowledge of teaching, a repertoire of instructional practices, and the abilities of reflection and problem solving and;
- Students should be viewed as autonomous learners who can become aware of their own learning needs and their ability to meet them.

In addition to promoting an array of instructional approaches, Saskatchewan Education provides an environment to support changes in professional practice at all levels of the educational system including the school divisions, the schools and the classrooms.

Classroom Curriculum Connections: A Teacher's Handbook for Personal-Professional Growth (1992) *describes a model for teacher-directed development in relation to the Core Curriculum that aims to strengthen teaching and student learning. The handbook has been developed from a model of curriculum implementation that recognizes that implementation is a developmental process, not an isolated or discrete event. It contains three personal-professional growth processes (curriculum reflection, curriculum inquiry and curriculum networking) that offer teachers opportunities to increase their understanding of teaching/learning situations, expand their repertoire of instructional and assessment techniques and strengthen their support systems, including collegial relationships. Participation in the growth processes complements what teachers are already doing and supports their yearly program planning.*

District and school strategic plans (vision, mission statement, goals, objectives)

Context – History and Demographics
Sacred Heart Community School is part of Regina Catholic School Division, which serves over 10,000 students in 29 communities. This publicly funded Catholic elementary school is an inner-city school with a student population of approximately 450 from pre-kindergarten to grade eight. The majority of students are of aboriginal ancestry and most live in poverty. A

high student mobility rate is a reality that is dealt with on a continual basis. Six years ago, the school was known for its violence, vandalism and low achievement. Because of a strong commitment to change and to improve the education of each child, the school has become peaceful and child centred. The achievement gap has also been significantly reduced so that a population living in poverty now has hope-filled academic results. The staff are partnering with students to "change the world" (Daggett). The changes have occurred amidst many challenges but, despite adversity, the school is now known for its ethos of success and well being.

Action - "Taking Control of an Overcrowded Curriculum" (Daggett)
Combining six years of dreaming, planning, collecting data, adjusting and re-adjusting, the Sacred Heart team has produced positive academic and social results. A safe and orderly environment has been created and at the same time, a balance of comfort, security and stimulation achieved.

Sacred Heart moved from a "factory" approach in education (sitting in rows and all working on the same page), through the "supermarket" era, (more and more subjects and less time for each) to a place where, together with students, staff decided what the students most need to learn from the overwhelming curriculum. A new and exciting approach to learning was created. The staff knew that the traditional approach to education was no longer an alternative for unhappy school children and their parents. They needed to meet the needs of every individual.

Initial changes included moving from an authoritarian approach to one of mutual respect, focusing on relationships with staff and student leadership, aligning the school division's mission and vision with the school's mission and vision. Sacred Heart began "with the end in mind", dreaming of what the staff wanted the school to be. They put improvement plans and promises in place. Lezotte's "Correlates of Effective Schools" were used as a guide in goal setting. Staff collected their own data to help direct their decisions and keep them on course.

A "Responsibility Plan" moved the school from an authoritarian approach to one of mutual respect. The remaining changes were implemented at different stages during the journey. The staff implemented unique grade combinations, an adjusted school day, a high quality physical education program, resource-based learning, brain-based learning and the integration of technology into the learning process. Sacred Heart has worked to make the school, look, taste, feel and smell like a good home, where every child is treated with dignity and respect no matter what the circumstance.

The staff shared struggles and joys as they made changes to this inner-city school to create a safe and orderly environment, and a positive, upbeat, progressive approach.

The Journey

The Dream
Sacred Heart School "began with the end in mind" and prepared to travel the difficult road to the finish. The vision for the ideal school is a school with a family atmosphere, a school where children are happy, safe, and free from violence and bullying. The school craved an atmosphere of mutual respect where students took responsibility for their behaviour, and were interested and challenged by learning about and discovering the world around them. The staff wanted the children to be proud of their culture and to celebrate their successes. The goal was to develop the whole child, physically, spiritually, cognitively and emotionally, by incorporating aboriginal spirituality into Catholic faith through the use of the medicine wheel.

Challenging Historical Practices
Historically, the most prevalent leadership style in school as well as at home appeared to be the authoritarian style. If children were punished at school, they were often also punished at home. As a Catholic school, the school needed to be different and Christ-like in its approach. The philosophy was one of mutual respect and the staff wanted to reflect that in everything that was done. They moved away from a controlling approach, to one of complete respect in all situations. Staff said that if they were going to make a difference they had "to give until it hurt". The staff believed they needed to treat every child as the Christ-child no matter how hard it was. The staff was told that if a staff member was out of control, the principal would come between them and the student, invite that individual to take a break, and let the administration take over with the student. When teacher and student had calmed down, they would talk and the adult would be expected to apologize for his/her behaviour. Staff agreed that students would always be given choices in every situation, and never ultimatums. The staff also asked the children for their suggestions as to how the school could continue to improve and get better. Student voices were heard and respected.

The Responsibility Plan and the Power of Love
Sacred Heart staff declared the school and school grounds a "no violence sanctuary". Within these boundaries, everyone would be safe.

An existing Responsibility Plan was modified to suit the students' needs and implemented step by step. The plan was one that focused on mutual respect and responsibilities. Students were not only taught their own responsibilities and obligations but also those of the staff. If either party did not live up to their obligations the other party knew the steps they could take to ensure that it would be looked after and solved in a respectful manner. The objective was to improve student behaviour. The primary goal was to treat every student as the Christ-child, with dignity and respect no matter what they did. The staff promised to model the behaviour expected from the students. A second goal was to acknowledge responsible choices on a regular basis and to correct the irresponsible choices, with a focus on consistent and logical consequences.

In-School Suspensions
Students were taught that individuals are always free to make choices but for every choice there is a consequence. For any illegal act or an act of physical violence, the consequence was a full-day in-school suspension for senior students. For younger students, the time was adjusted according to their age. Staff chose an in-school suspension rather than to an out-of-school suspension. An out-of-school suspension was no solution for students; it was exactly what they wanted. Sacred Heart School's answer to them is always the same. "When you make a poor choice at home, your parents don't send you to me to solve the problem. This is your second home, where we act as the parent when you are at school, and it wouldn't be right for me to expect your parents to settle the issue. We have to solve the issue together here at school." In-school suspensions are handled in a kind, consistent manner. The staff believed that punishment alone does not modify behaviour. The goal of an in-school suspension program is to promote positive behaviour. Suspended students go to a "Quiet Room". During this time they are unable to go to class, to move around the school, or to see their friends. The staff, however, supports them positively. They have food to eat, water to drink, and escorted to the bathroom, when necessary, as they have lost all school privileges during the suspension. Schoolwork is not allowed during this time, as it is an honour and a privilege to be in the classroom. An in-school suspension allows students to spend time alone, to calm down, and to work on a self-improvement plan. Staff used this time to problem solve with the students, and build the students' self-esteem. A counseling time is also part of this program. At the end of their stay, the students never leave angry or upset. They know the problem has been solved and is over. The student population has continued to grow and suspensions have decreased.

Population Increase
Negative Behaviour Decrease

Year	# of Students	# of Suspensions
1995/1996	282	127
1996/1997	334	54
1997/1998	376	39
1998/1999	390	21
1999/2000	412	19 (6 students) (all new students)
2000/2001	459	20 (approx.)

For other forms of violence, bullying, threatening etc., the consequence is a "timeout", which also varies in length, and has a counselling component. During these sessions students problem solve, using alternatives to violence and are reminded of their personal gifts and talents. Again, the students always leave with the problem solved, with all parties involved in the solution. The students know the incident is over and that we have faith that appropriate choices will be made in the future.

Acknowledging the Positive Efforts
There are three school-wide reward systems.

1.   Immediate Rewards
The first is "Caught Being a Positive Role Model". All staff members carry tickets and when they see a kind act they fill out a ticket, and send the student to the office. In the office they explain to the principal why they were sent. The student is thanked and receives verbal praise, along with a small treat, for the kind act. The ticket is put up on the wall in the office for all to see. Draws are made at the end of each month for prizes.

2.   Recognising Week-Long Efforts
Those excelling in "Weekly Classroom Goals" are recognized each week at the school assembly. These outstanding students are brought to the front of the gymnasium, are acknowledged with a certificate and their names are entered into an end-of-the month draw for a backpack filled with books, games, and a variety of donated prizes.

3.   Rewarding Long-Term Efforts
The monthly award is called "The Triple A Club" (Attendance, Attitude and Academics). Students who have excellent attendance, a positive attitude toward everyone in and around the school, and who work to the best of their ability for one month are selected for a half-day trip out of the school at the end of every month.

With a focus on positive behaviour and dealing consistently and kindly with negative behaviour, the school provides the students with the motivation to adjust to an atmosphere that many have never experienced.

Making School Like A Good Home
In addition to the responsibility plan, staff wanted to make the school like a good home. They eliminated the established practice of lining up the children before entering the school. The school didn't know too many families who made their children line up before entering their home. By simply removing this procedure, they eliminated the frustration felt by both teachers and students. Now, those students closest to the door enter the school first and proceed to their classroom. The staff realized that if they were to have a family atmosphere they needed to treat the students as they would their family members. Students have access to the school anytime, just as children have access to their home when they are outside.

Publicizing Promises
Following the establishment of a Responsibility Plan, along with the other adjustments the staff made; the next step was to write a mission statement for the school. This has proven to be a useful tool as it keeps them on course as they navigate towards their dream. The staff publicises this to students and families and promise that it will happen for every child.

MISSION STATEMENT FOR THE DISTRICT AND SCHOOL
As part of the Regina Catholic School Division, Sacred Heart Community School is dedicated to working with the community and the parish to provide a quality Catholic education for every child. The school focuses on a positive climate that is conducive to learning. Clear goals emphasize the values and beliefs. The school places a high emphasis on learning and every child is treated as the Christ-child.

Background on what initiated the project

The "Class from Hell" Go Into a Grade 2/6 Split: Pilot Project
Early in the journey Sacred Heart School had a grade five class that was affectionately referred to as the "class from hell". These wise young students had such strong leadership skills that they went through three teachers that year. The staff knew they had to harness that energy and put it to more positive use. The question was "How?" They realized this would never happen with all of them in the same classroom again, so the staff devised a "divide and conquer" plan. By putting these students with younger students, the intention was that they would act as leaders and mentors for the little ones. Staff could not find any research to support this action but decided to pursue the idea anyway. When asked for the research to support this plan staff told our superintendent that there wasn't any but they would write it. The school found two teachers who were willing to take on this pilot project, so the team for the grade 2/6 split was born. They have not looked back. The class from hell became the Holy Ghosts.

These two teachers won the Roy C. Hill award, a Canadian award, for one of the most innovative educational projects of the year. They proved to themselves and to the school that any dream is possible when committed, passionate teachers are trusted and believed in. The dream was realized and the unique grade splits have since been expanded to include almost the entire school.

Survey of Grade 2/6 Pilot Project
(both teachers loved it and wanted to do it again)
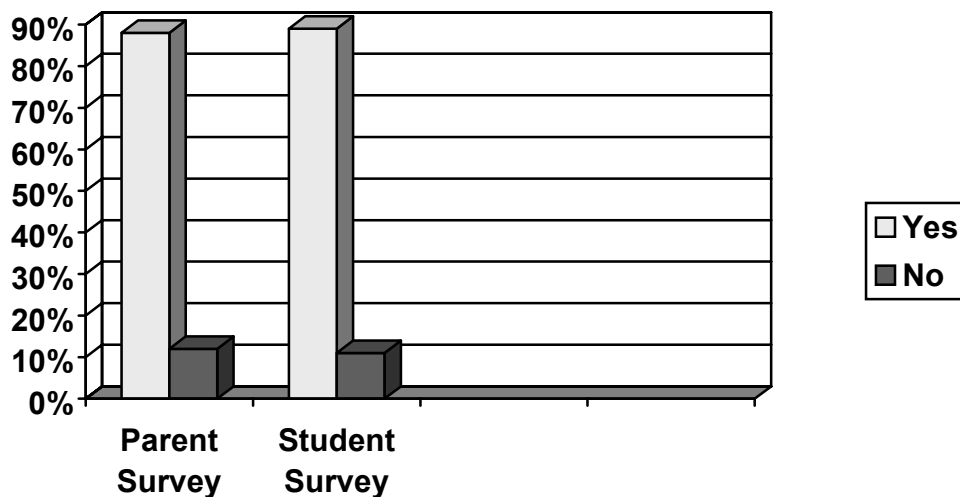
Description of the Sacred Heart School Project
As a result of concentrated effort over the course of six years, Sacred Heart School has created several innovations for the needs of students that have significant impact and are aligned to system direction. This is a story of embracing students' and staff learning related to the important transition phase from childhood to adolescence. This urban inner-city elementary school has a proven record of enhancing student and staff learning through facilitating and initiating an advanced professional learning community. This community nurtures student learning through several avenues including formative assessment and the resulting expansion of effective teaching repertoires. Sacred Heart has been recognized with

a provincial Stirling McDowell award and internationally as a model school by the International Leadership Center in New York.

Changes To The Learning Resource Program: Integrated Special Education
The school completely changed the delivery format for special education and the Learning Resource Program (LRP). Historically, it had been a pull-out program where services were provided to students struggling well below grade level. The number of students in the program had continued to grow and it was nearly impossible to deliver any kind of effective programming to accommodate their needs. In addition to this, the students were reluctant to leave their peers and did not want to be singled out from the rest of the class. Since most of the students were well below grade level, staff decided on a new action plan. From kindergarten to grade three, they implemented an 'Early Literacy' program. It was a preventative program with three main components: language skills, phonetic skills, and reading skills. This was delivered with the help of teacher associates, work placement students, high school students, and volunteers.

For the older students, grades four to eight, the Learning Resource Teacher provided in-class support by co-planning and co-teaching with the classroom teacher. Adaptations were made to accommodate those students who were unable to follow the pace and demands of the regular curriculum.

The staff was pleased with the progress of both the younger and older students in the LRP programs, as evidenced in observations and tracking records. The school was also beginning to see a positive change in the students' attitude towards school and an increase in the level of skill development. Part of these results were also due to the fact that, as a school, they were moving away from text-book learning to resource and interest-based learning.

A Loving, Nurturing Culture
Behind changes of this magnitude were teachers who are willing to take big risks because they are so committed to kids. They are heroes in the lives of children. Those individuals emerged in the school and once their creative juices started to flow and they began to see results, nothing could hold them back. The staff became the pulse of positive thinking and they nurtured the culture of loving kids. The staff often quoted the following saying at the school: "If we do things the way they have always been done, we'll get the results we have always gotten." This message gave the school the permission needed to look for new and different ways to accomplish their goals.

Brain-Based Learning/ Multiple Intelligences
Sacred Heart School wanted to investigate the theory of brain-based learning for the school. Staff knew if this venture was to be successful, a team of teachers had to be committed and willing to take the lead. The school purchased videos and presented the staff with an overview of the theory and how it could be applied in their situation. After assembling a team of six and scrambling to find financial support to attend a five-day, Accelerated Learning Conference in Irvine, California the staff began the process of implementing brain-based learning, a process that is based on Howard Gardner's Theory of Multiple Intelligences. It has been an exciting and successful venture.

Growing Pains

The school's accomplishments were not achieved without facing many struggles and overcoming many barriers. As do most families, Sacred Heart School only wanted to focus on the positives. They believed, however, that the pain and struggle make the growth and success worth celebrating. When everyone is working so hard, irritations can grow into major issues. Reminding teachers of their code of ethics and that as a school family they had to be willing to model what they wanted from their students certainly helped. The staff is convinced that modelling what they wanted is still the most powerful tool they have for working with the whole school community: staff, parents and students. The staff was always willing to do whatever it took to solve any problem with parents, teachers or students but imposed a condition of complete mutual respect. The staff insisted that they receive the same respect from parents that the parents wanted shown to their children. Otherwise, the parents were asked to return only when they themselves could show such respect.

As professionals, Sacred Heart staff believes they must promise parents that they will treat their children with dignity and respect at all times but insist that they be given that same respect in return. Again, modelling what the school wants is a powerful tool. The administrators also know that they have to live what the school believes. When they deal with angry children and parents they know everyone will be watching their every action and reaction, and that they must "walk the talk" at all times.

Listen! ... Understand!
Besides modelling what the school wanted, another valuable tool for facilitating change was being a good listener. And, listen the staff did. To monitor and focus change requires good listening skills. Upon reflection, staff realised that during school hours they were being quite successful. During recesses and noon hours, however, the students fell back into a survival mode, as neighbourhood quarrels came to life and continued to be played out in the only way students knew.

It was through listening to the children that Sacred Heart found another new direction. When staff asked one child how they could help him with his recess problems he simply said: "Don't have recess." The solution was so simple in the mind of this child. It was from this conversation that the idea of the adjusted school day was conceived.

The solution was simple but who would go for it? Fifteen minute recesses and an hour lunch were one of those routines that seemingly had existed since the invention of schools. The school believed that society had changed, and children had changed in many ways, so why couldn't the structure of schools change? Because many of the children were not enrolled in activities outside of school, staff had to be sure they would have physical activity on a regular basis. After much research and investigation into the needs of the children, staff came up with a proposal for a new school day. Sacred Heart School received approval to change the traditional school day prescribed in the provincial laws. The school day is outlined here.

With this new school day a strong focus was placed on the Physical Education program. Every class would have a twenty-minute Physical Education period both in the morning and the afternoon.

Adjusted School Day
Instructional Time Stays The Same

- 9:30 – 12:00 (no recess – 20 min. Phys. Ed)
- 12:00 – 12:30 lunch (everyone stays)
- 12:30 – 3:00 (no recess – 20 min. Phys. Ed.)

Approximately 95% of the parents were willing to try the 'Adjusted Day'; however, a very small number of parents resisted the idea. Their main concern was: "When will our children learn to socialize?" Staff responded that they believed children as a group of three hundred did not learn useful; social skills. The staff believed children learned to socialize in groups of two or three. Even though there was this strong resistance by a small number of people, the school collected data that allowed them to move forward. The staff implemented their plans for the adjusted school day. The pilot was accepted on a permanent basis.
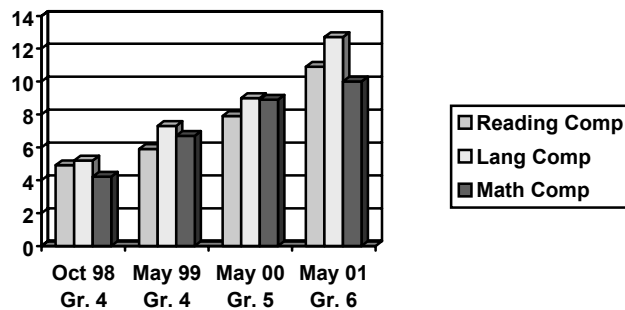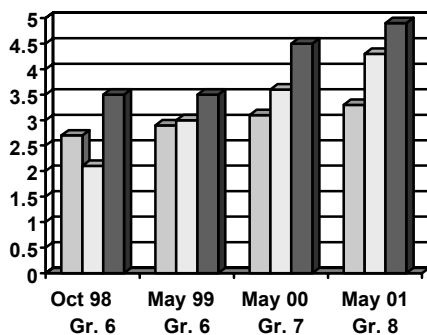
Adjusted School Day
Survey Results Of Pilot Project After One Year
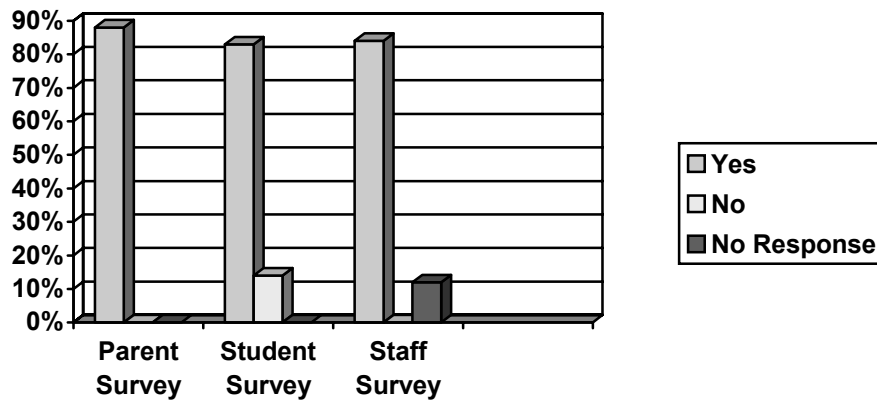
Base-line Testing - Leading With Data
In order to have credibility around the research project, the staff conducted base line testing so they could actually see if they were making a difference academically. The Canadian Test of Basic Skills (CTBS) was used. When this project very low functioning but every student's growth is recorded and monitored.

Student # 1 (A strong student) ⟹

⟸ **Student # 2 (A weak student)**

Summary: Inputs
- Special structures
- Adapted school day
- Unique grade splits
- Integrated special education
- Brain based learning
- Framework for understanding poverty (Question: Is there a specific reference?)
- Research and 6 year commitment to incorporation of:
- EQ (Question: What is EQ and what is the reference?)
- Howard Gardner's Multiple Intelligences
- (Question:reference?)Lezotte's framework: building blocks of continuous school improvement
- Stephen Covey's '*Seven Habits*' (Question: The refercne?) processes to ensure focus and quality processing.
- School based grants centred on Lezotte's Correlates of Effective Schools
- Technology Access – League of Effective Schools, Model Schools
- Annual purchase of resources for schools
- School-based administrators personal resources
- Technical support for data analysis

Summary: Processes
- Focusing on safe and orderly environment e.g. responsibility plans, loving kids more than school
- Partnering with students
- Developing staff team leadership: success teams, teaching partners
- Revisiting vision of school and aligning a shared vision with school division
- Aligning school mission with the provincial Assessment for Learning initiative
- Setting goals based on Correlates of Effective Schools
- Leading with data
- Leading with research
- Using a common language
- Planning strategic & regular celebrations
- Nurturing authentic parent involvement
- Using rubrics, portfolios, electronic reporting in assessment
- Developing authentic relationships, relevancy, schedules for success, integration of learning as a shared experience among students, their families and staff

Summary: Outcomes
- Increased student "time on task" and academic outcomes
- Several school awards and recognitions
- System holding power of student population: double student population in 7 years
- Evidence of moving from violent to peaceful environment
- Significantly less vandalism
- Advanced professional learning community
- High staff initiative

- Common vocabulary used through out system
- Movement toward Second Generation Effective Schools

Summary: Evaluation
- Consistency with System Direction for Sschool Improvement: inputs, processes and outcomes.
- Nurturing Culture/Sustaining Our Brain Activating Oasis

Sacred Heart School has had many visitors through the school and after about five minutes of standing and talking in the halls they almost always smile and make this comment. "It is so nice here…I can't explain it…it just feels so good". Why does this school feel so good? Let us explain.

It feels so good because the students are as proud of this school, as are the staff. They take care of one another and of the school. They are not looking to see what they can get away with. They want to talk to the teachers or their friends, look at the pictures on the wall, tell them about how they helped some little kid on the playground, or just need a hug from one of the staff.

The "Responsibility Plan" (important: staff don't say "Discipline Plan") designed to "grow" responsible kids and adults and, given a little sunshine and water, they are all flourishing. A discipline plan puts the teacher in control; a responsibility plan puts everyone on an even playing field and nourishes self-control. In a responsibility plan, everyone has a choice and, when they choose to be responsible, they know what happens. When they make a poor choice, they know what happens. It's no big deal. It just takes kindness and consistency by everyone involved. Why do they do all this? Because they have fallen in love with their kids and they know:

> The mediocre teacher tells.
> The good teacher explains.
> The superior teacher demonstrates.
> But the great teacher inspires.
> *- William Arthur Ward*

Staff and students alike have learned to consistently model the learning process and effectively integrating the technology. Both teachers and students learn through the reflection, planning, monitoring and celebrating process. Children and staff alike have recognized that learning is a lifelong affair. They have taken a research base, applied it in a challenging situation, and have data to both show past improvements and to make the future better. This school shows evidence of leading with student outcome data with the intent to make a difference and the result of making one.

Findings of the study[5]

TEACHING AND ASSESSMENT AT THE SCHOOL

First steps: Addressing bullying and vandalism
The school's change story started when the new principal made it a priority to take action against the high level of aggression and vandalism in the school. The first change introduced was the complete reorganisation of recess time. Recognising that students needed a break, the principal replaced recess time with two breaks of 20 minutes each, with the class either in the gym or outside playing sports and different kinds of games the children enjoyed. The number of disciplinary incidents dropped immediately and that gave everyone in the school the courage to initiate and support further changes in the area of discipline.

One of the next moves was to address the high level of vandalism in the school. The principal talked to students about it in a special assembly and made them aware that the school's scarce resources could be spent on school trips and books for children instead of paying for the damage created by vandalism. She promised the students to provide them with the money to have an ice-cream party and go on a school trip if vandalism could be significantly reduced. As had been the case with restructuring recess time, the second innovation turned out to be a success story. When vandalism dropped to almost zero, she invited the District Superintendent into the school to congratulate the children and to hand them the cheque with the extra money for the school. Vandalism and violence in Sacred Heart Community School have remained low since that time.

Split grades
Early in the history of its change process the school had a grade six class that was highly energetic with little discipline for learning, resulting in a high teacher turnover for that class during the one year. Principal and staff put the class together with younger students so that the grade six students could act as mentors and leaders for the younger grade two students. Again, the change was successful. The two teachers who took on the task of "team-teaching" the class later won an award for one of the most innovative educational projects of the year in Canada.

The unique split grades have since been expanded to include almost the entire school. The split grades give each of the older students the opportunity to act as responsible leaders and to mentor younger children. Teachers try to create a culture of mutual support in the classroom. Now all of the school's classes are made up of students of two different age groups. Older students in lower secondary provide individual feedback and support to the younger primary school students.

School like a good home
The school's Catholic values are part of the school's mission statement and are openly shared with the children in the school.

Aware of the deprived and often unstable conditions in many of the students' homes, the staff decided to turn the school into a place as safe and nurturing "as a good home" to provide the

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emotional stability necessary for learning. Now, students have access to the school at any time of the day. There is a warm breakfast for all students in the morning before the first lesson starts. Later, students get a snack and a warm lunch.

Parents are welcome to come into the school at any time. Many of them have had very negative experiences in their own school days, so Sacred Heart Community School tries to be as welcoming and open as possible. Once every year, there is a teacher-parent conference. Students present their work and their portfolios to their parents and teachers. Together teachers, parents and student discuss what the student needs to focus on in his or her own learning and how parents can support learning and development. During these meetings teachers encourage parents to help their children with homework and to take an interest in their child's portfolio.

Meeting individual learning needs
Sacred Heart Community School has developed different methods to meet the individual learning needs of students. Teaching assistants are available to provide individual student support inside the classroom. Computer programmes as well as library books are clearly marked with regards to their level of difficulty so that students themselves can look for the resources that best meet their individual learning needs.

From grade three onwards, students diagnosed with severe learning disabilities get extra support. They are referred to the teaching assistance team and are put on a Personal Programme Plan (PPP) to get the individual support they need. Whereas 2% of all Saskatchewan students are currently on PPP's, 10% of students in Sacred Heart Community School get extra support. Teachers observe a correlation between learning difficulties and the high poverty rate in the area. Some of the children from poorer families are more likely to have learning difficulties because of emotional, nutritional or other problems in their homes.

Classrooms are well-equipped with books for young readers and computers funded through local and provincial taxes. Students and teachers have access to the internet and use it in the classroom.

A key part of the school's philosophy is to provide students with choices for their own learning. This is seen as part of the school's formative assessment strategy because it enables individual students to pursue their own interests and learning needs.

Brain-based learning in a resource-rich school
In recent years, the teachers have taken part in a lot of training activities in brain-based learning and multiple intelligence teaching. Even the children now speak the language of multiple intelligences. They talk about being "picture smart" (visual-spatial intelligence), "word-smart" (verbal intelligence) or "number-smart" (mathematical intelligence). It is part of the school's philosophy that each child discovers those things he or she can do really well.

Learning portfolios for every child
A pilot scheme in 2002/2003 with all grade three and grade five students convinced the staff of the effectiveness of electronic portfolios. Portfolios primarily serve as a basis for formative feedback and student self-assessment. Through the portfolios, students will be able to track their own progress in writing, in reading and in other areas.

Students keep exemplary pieces of their own writing, document their projects, scan in hand-written texts and art work and even record their own reading in their portfolio under different headings. Teachers provide guidance to students on how to assess their work   In the near future, students will have benchmarks for portfolios, related to the proficiency targets developed in the school. A team of experts in the school is currently creating templates for every grade level. A teacher new to the school has developed user-friendly portfolio software allowing students to do as much work on their portfolios on their own as they possibly can.

Report cards for formative assessment
Three times a year, students get report cards. The school has already made considerable changes over the past years to fit report cards to its pedagogy. Now, formative comments are a key part of any report card, along with marks. The teachers believe that there should also be a section on cross-disciplinary skills on the report cards. This would provide students, parents and teachers with information on a student's broader cross-curricular skills such as working in teams, communicating, and so on. In the meantime, the Catholic school division has noticed that Sacred Heart School is ahead of its time. Teachers from the school have been nominated for a committee that will be developing new report cards for all schools in the Regina Catholic School Division. The school's open and non-bureaucratic mindset with regards to experimentation is now providing successful models for other schools in the school division.

APPENDIX A

WHAT WORKS IN INNOVATION IN EDUCATION

ENHANCING LEARNING THROUGH FORMATIVE ASSESSMENT AND THE EXPANSION OF TEACHER REPERTOIRES

Study Protocol for National Experts and OECD Consultants

INTRODUCTION

CASE STUDY GOALS AND METHODOLOGY

1.   The importance of tailoring learning more closely to individual progress, rather than to suit the administrative convenience of education systems, is a long-running theme of the lifelong learning agenda. CERI case studies on "Enhancing Learning through Formative Assessment and the Expansion of Teacher Repertoires" will look at some of the most promising existing models in schools that have developed new relationships between teaching and formative assessment. In the context of a 'What Works' study, we aim to:

- Describe the qualities of effective teaching, learning and formative assessment as practised in a variety of settings and contexts, and how this approach differs from "traditional" teaching methods (too often, teachers believe that they are implementing a new teaching method, when they are not).

- Learn more about the history of formative assessment in each case – how policy-makers, school leaders and teachers learned about formative assessment, why they decided to pursue this approach to teaching and assessment, and why they believe it is effective.

- Learn from teachers, school leaders and policy-makers how they have managed to develop and implement innovative teaching methods, what the incentives and disincentives to using the method are, and how the approach might be scaled-up.

- Share these lessons on innovation and dissemination with a broad audience of policy-makers, practitioners, researchers and the general public.

2.   The case study methodology will involve observations, interviews, and document reviews.

Through the case studies, we will be able to describe and analyse:

- a broad variety of approaches to formative assessment and innovative teaching;
- effectiveness of teaching methods and satisfaction of teachers and students;
- strategies for increasing validity and reliability of formative assessment/measuring impact of assessment methods;
- effective implementation strategies in the schools we visit;
- effective professional development strategies;
- the potential for scaling-up of formative assessment teaching methods.

DOCUMENT REVIEW

3.   National experts participating in the CERI study have been asked to gather a variety of documents on education policy in the country, as well as the relevant district and school. These documents might include:

- National policies/statues particularly relevant to our study on teaching, learning, and formative assessment.

- National white papers and other documents that have had some influence on teaching, learning, and formative assessment.

- Influential papers on teaching and learning and approaches to assessment from universities and/or education think tanks that have garnered the attention of teachers, school leaders or policy-makers.

- Relevant articles from widely-read teacher professional journals.

- Any other documents that will help determine where countries are located in terms of their knowledge base and promotion of formative assessment and other innovative teaching methods.

LOGISTICS – NOTES FOR RESEARCHERS

4.   Some logistics to keep in mind for interviews.

– Researchers may want to gather documents beforehand so can decide what line of questioning is most likely to be useful, get an idea of what to look for during classroom observations and interviews.

– It may be helpful to tape interviews. Researchers should use their judgement as to whether taping the interviews will help or hinder the interview process (e.g., students may be less willing to talk in the presence of a tape recorder), and remember to ask permission of those you would like to tape.

- Students participating in the focus group will likely need to have a permission form signed by their parents. A sample copy [used in New Zealand] is attached.

- The majority of case study visits will take place between January and April.

- Some of the more basic questions are covered in a separate questionnaire and can be given to interviewees prior to the school visit.

IMPORTANT NOTE ON ORGANISATION OF THE PROTOCOL

5.   In order to maintain consistency across case studies – and to simplify the protocol – we have developed a set of core research questions. These are the questions we consider vital to answering not only "What Works in Innovation" but also to explaining why and how the innovation works. Core questions are highlighted at the beginning of each section, and are followed by a longer list of additional, more detailed questions. Researchers may draw upon the longer list of questions as appropriate and relevant to each case study.

ENHANCING LEARNING THROUGH FORMATIVE ASSESSMENT AND THE
EXPANSION OF TEACHER REPERTOIRES

PROTOCOL

CLASSROOM OBSERVATIONS

6.

> Core Questions:
>
> - What strategies are used in the class, and how do students respond to the approach?
>   - Does the teacher have ways of evoking information about the students' current level of knowledge, and encouraging them to explore further?
>   - Does the method catalyse learning between students?
>   - How does the teacher respond to written work?
>   - How does the teacher set up a system whereby students can accomplish learning goals?
>
> - **Describe the quality of interaction between and among students and teachers. Provide your own analysis of how the class differs from what they have seen in more "traditional" classrooms.**

Additional Questions

7.   *Classroom logistics*

- What is the number and mix of students in the class being observed (gender, age, race, abilities, personalities)? How do students behave in the classroom (rowdy, respectful, engaged, bored, a mix?).

- How does the teacher interact with students in the classroom (i.e., moving around the classroom and speaking with students on an individual basis, spending longer periods of time with students who appear to having greater difficulty, etc.)?

- What is the physical set-up of the classroom (including arrangement of desks and tables)?

- Does the teacher communicate the learning goals for the class being observed and if so, how?

8.   *The flow and content of discussion*

- What can you observe about how the teacher gives attention to the learning styles of individual students? Does the teacher use more than one approach or technique to explain concepts?

- Does the teacher leave pupils time to hesitate, make mistakes, reflect, self-correct, enter into dialogue?

- How does the teacher appear to manage students with different abilities, different levels of motivation, loud or quiet students, "problem students", male and female students, students of various ethnicities, age, SES background, and so on?

- Does the teacher use praise? Criticism? If so, are comments aimed at a specific task/at student's ability?

- Do students raise their hands? What is the level of peer interaction in the class discussion? Do students also give each other feedback?

- Does the teacher:

  ➢ use feed forward techniques (i.e., give students a preview of what they will be learning and how it fits into the larger context of the course)?
  ➢ use alternative strategies to explain techniques/concepts, or suggest alternative paths the student might take to lead to improvement?
  ➢ use feedback to help the student 're-conceptualise' already acquired information?
  ➢ give feedback on the student's current level of achievement against an expected level of achievement? /give evaluative comments linked to criteria indicating those features that add to or detract from high quality?
  ➢ use "scaffolding techniques"- i.e., providing as much or as little help as the student appears to need?
  ➢ provide non-evaluative descriptions of the features of a students' work?

- How soon does the teacher provide feedback to students? Are students provided the opportunity to discuss how to remedy any weakness with their peers, or independently?

- Other observations on the teaching and learning process in the class?

- INDIVIDUAL TEACHER INTERVIEWS

---

9. Core Questions:

- How did the teacher first hear of formative assessment?

- What kind of ongoing professional development opportunities has the teacher found to be most useful in learning how to implement innovative teaching methods in his/her classes?

- What general strategies does the teacher employ in the classroom over the course of the school year? What is his/her approach to teaching intended to accomplish, and what evidence does the teacher have that the approach is effective?

- How is the teacher able to manage the variety of student needs, the competing demands of curriculum, testing and other bureaucratic requirements, and extra time required for planning and assessment?

Additional Questions

10. *Teacher's pedagogical framework/approach to teaching*

- When and where were you first exposed to this teaching method, and what kind of professional development have you participated in to develop your skills?

- Has the teaching method you are using led to improved student outcomes? What evidence do you have that this approach to teaching is working (can include hard and soft data)?

- What do you believe are the most important principles of sound classroom assessment? Why do you think that these principles work well in your classroom/for your students?

11. *Approaches to problem-solving/Tailoring teaching to individual student needs*

- Are you able to align teaching goals with classroom activities and assessment of students' performance, requirements of the school and district? Do teachers within the school/schools within the district share a common mission and vision? What are the challenges? What are the opportunities? Please describe, providing as much specific information as possible.

- Do you conduct an initial assessment of student needs? If yes, what is the assessment like, and what do you do with the assessment results in subsequent months? How do you go about identifying where the student has difficulties? Do you focus your assessment on suspected gaps?

- What are students most likely to be able to do at the beginning of the course, and what should they have accomplished by the end of the course? How do you establish learning goals for your class and for individual students? [Look for some evidence that the teacher is aiming for use of higher level thinking skills, such as speculation and critical reflection.]

- What are some of the different learning needs of your students? How do you address students' individual learning needs?

- How do you know when students "get it"? What do you do when they don't appear to get it? What are typical difficulties students encounter? Are there some students who will never get it? Have you ever been stymied by a student – wondering where he or she was coming from? What did you do? Did it work?

- How do you match your responses to what you know of students' performances and personalities? How do you decide what type of feedback you will give – e.g., the scaffolding technique (as little information as possible so that the student will able to reach answers on their own to the extent possible), focus on peer feedback, etc.

- How soon do you provide feedback to students? How often are you able to talk with students about how they might remedy any weakness? Do students have the opportunity to address remedies with their peers, or to suggest their own remedies?

- What principles/concepts you believe are most important for students to understand in the subject area you are teaching? How do you communicate these principles to students? [For example, a drama teacher may consistently focus students' attention on the key elements of drama. In a math class, the teacher may attempt to teach to a core set of mathematical principles as a framework for understanding.]

12. *Parents*

- Do you interact with parents more or less than you used to? Has that interaction changed in nature as your teaching methods have changed? If so, how? How involved do parents need to be/would you like parents to be? In what ways? What kind of feedback do you give parents?
-
- STUDENT FOCUS GROUPS

13.

Add

Core Questions:

- Are students aware that their teacher(s) are using formative assessment?

- Do the students have a better idea of where they stand and where they are going in the class than they have in other classes they've had where formative assessment does not feature strongly?

- Have the students changed how they go about addressing difficult problems or addressing new subject matter? What problem-solving process do the students in the group follow?

14.   *Student motivation and goal orientation*

- What is it like to be learning at this school compared to other schools you've been in?

- Do your courses seem relevant to you? Why or why not? What classes do you like best? Why or why not?

15.   *The class*

- What do you typically do at the beginning, middle and end of your classes? Is it helpful to have things laid out for you so you know what you'll be doing and what you're supposed to be learning?

- What do you tend to do when you're working on a challenging problem and you're not quite getting it? What does the teacher do to help in these cases? What do you do to help yourself?

- What type of writing/homework do you do?

- What kind of feedback does your teacher give you in class? On your assignments? Is it helpful? What kind of feedback do you get from other students? Do you ever evaluate your own work? The work of other students?

- Does your teacher ever give you a list of things that should be included in a good piece of work? Do you ever look at models of good work? If yes, do you find these things helpful? Why or why not?

- Do you look at grades or comments on your work first? What do you find most helpful? Which do you think matters the most?

- Do you think all students treated the same way in the class? If not, how are they treated differently?

- What's the most important or interesting thing you've learned in the class so far? Do you feel more confident and capable in this subject area than you did at the beginning of the year?

- Do you think you've learned more about how to take charge of your own learning this year? Have you had different results for your work this year than in the past? [e.g., grades, class attendance, motivation for learning, speaking up in class, and so on. Try to get as much specific information as possible.]

- What do you do differently when you are working on something challenging or difficult? What do you do when you are stuck on a problem? What kinds of questions do you ask?

- If I were a new teacher coming to the school, what advice would you give me about what helps you most in your learning?

- Do your parents have opportunities to get involved in your school, with your homework? If yes, how? If no, do you know why not?

16.

> Core Questions:
>
> - Are teachers in the focus group aware of formative assessment teaching methods? If yes, how did they first learn about the approach?
>
> - What do teachers need to know and be convinced of before they are willing to take on a new teaching method, such as formative assessment (and if several teachers in the focus group are using formative assessment, have they found the method to be effective?
>
> - What type of leadership and school support have the focus group participants found to be most responsive to their own needs as they implement innovative teaching methods (e.g., professional development opportunities, reward and incentive structures, alignment with other curriculum and testing requirements, etc.)?
>
> - What do teachers perceive as the barriers and opportunities to bringing teaching innovations to other classrooms/the whole school? What has this school done to disseminate effective teaching innovations more broadly, and how well has the school strategy worked? What else could be done?

Additional Questions

17.   *School culture/teacher ethos*

- How do you find teaching at this school [as compared to other places you've worked? Or student teaching experience for new teachers?] What do you like best? What do you find most challenging or most difficult? Why did you choose to come to this school?

- Do you have opportunities to share ideas and knowledge, information about individual students with your colleagues? Describe.

- Is there a shared philosophy/common language for talking about teaching in this school? If so, what is it? Do most teachers buy into this philosophy?

- What kinds of rewards/incentives does the school provide for teachers who want to innovate? What are the disincentives to innovation? What kinds of restrictions and rules inhibit change in the classroom?

- [The interviewer will likely know whether there is a school mission or not – if yes, it may be useful to find out how embedded the mission is.] Did teachers and staff have a chance to participate in the development of the mission/strategic plan? Does the school plan shape what you do in the classroom? If yes, how? If no, why not?

18.   *Teacher professional development/capacity building*

- Do you have sufficient opportunities for ongoing professional development? Do you find the professional development opportunities you have participated in are relevant to real schools and classroom situations? What types of things have you been able to bring back and successfully apply in the classroom? What kind of professional development do you find most useful? [e.g., seminars, in-house experts, mentors, other?]

19.   *Potential for scale-up/whole-school innovation*

- What kind of buy-in is there in your school for innovation and adoption of new practices? Do more than or less than a third of the teacher's support the type of innovation in which you are engaged? What type of support/objections do teachers have to reform efforts?

- In your view, what would it take to fully embed "student-centred practices" in activities throughout this school?   What would a school with fully embedded student-centred practices look like? What are the barriers and opportunities to getting there? Describe in as much detail as possible.

- What type of school or system level barriers/opportunities is there to doing new and innovative things in your classroom?

SCHOOL LEADERS

20

Core Questions:

- How did the school leader first learn about formative assessment teaching methods? How did he/she come to view the teaching and assessment innovation as a critical element in school reform? What kind of evidence does he/she have that the method is effective?

- How does the school leader see his/her role in bringing about effective change?

- What has the school leader been able to do in his/her efforts to bring change to the classroom level?

-

- What lessons has the school learned about the barriers and opportunities of implementing school-wide change, and what advice might he/she give to others?

Additional Questions

21. *School leader's goals for the school/management style*

- What type of political pressure do you experience related to school performance? (i.e., from the Education Ministry, the school district, the local community, teachers and students)? How does this pressure affect the classroom? Please describe, including specific examples.

- How do you attempt to influence teachers' classroom practice and professional development/with students more generally? What kinds of incentives and disincentives are in place to influence teacher practice? How well do they work?

- What kind of evidence do you have that formative assessment/the teaching innovation is working? How do you measure it? [If not currently measured, what kind of indicators are available? What kind of data might the school collect in the future?]

22. *Support for teacher professional development/whole-school approaches*

- How do you support professional development of teachers in the school (time, resources, other)? Do you try to influence the type of skills teachers develop (i.e., toward particular approaches to teaching)?

- Do you have a strategy for getting formative assessment/the innovative teaching practice into other classrooms within the school, or to have exemplary classrooms serve as a model of good practice for other schools?

- What would it take to fully-embed student-centred practices at this school?

- What are barriers to change in the school, including systemic variables? What do you see as opportunities for change in the school? [alignment/political pressures/how embed student-centred practices]

- How do you deal with teacher resistance to change? Examples?

23.

> Core Questions:
>
> - What is the national context for education? (e.g., the cultural salience of education, the role of national and local-level policy-makers in promoting and provoking change, and so on).
>
> - What are predominant philosophies and approaches of policy-makers to influencing school level change (e.g., through top-down policies, such as testing and accountability, or through support for school-led changes and improvements, or a combination of the two approaches?).
>
> - Are policy-makers actively engaged in promoting formative assessment? Are there special initiatives? If so, what are they? What is the history of the intiative(s)?
>
> - How do education policies (national, provincial, local) facilitate or hinder efforts to implement school level change, disseminate innovative teaching and assessment practices more widely?

Additional Questions

24. *General*

- Describe the relationship of national, provincial and local districts to individual schools in this country.

- What tactics do policy-makers use to try to influence what happens in schools/individual classrooms, if any?

- Is anything being done at the policy level to "provoke and support" of teachers in adopting new practices in formative assessment? If yes, what is the history of the effort – what did it take, politically, to make something happen? Describe the initiative and its visibility at the policy level.

- What are the major controversies, if any, in this country regarding the relationship between top-down approaches to school reform, and bottom-up/school-level change?

- What are the major controversies, if any, in regard to school accountability and the use of external tests and summative assessment? Are there any high-profile efforts to discuss alternative approaches to assessment? If yes, what are they?

- Does the national/provincial education ministry provide funding and/or policy support for teacher professional development? Is there any effort to influence the type of professional development teachers receive?

- Are there any policy-level incentives for schools and districts to scale-up with innovative practices, including formative assessment?

- What are the challenges of aligning parts of the system? (e.g., accountability requirements, national/provincial or district-wide and individual school reform efforts, and so on).

- What are the barriers and opportunities to influencing professional practice and curriculum developments through policy?

- How do national/provincial policy-makers hold districts and schools accountable? Are under-performing schools penalized in some way? Are high performing schools rewarded in some way? What type of penalties/support to under-performing schools receive?

- Are educational research and development supported at the policy level? If so, how? How are research findings disseminated to schools and school districts?

APPENDIX B

List of Contacts for the OECD Activity on Enhancing Learning through
Formative Assessment and the Expansion of Teacher Repertoires

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APPENDIX C

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