

DR. STIRLING MCDOWELL  
*Foundation*  
FOR  
RESEARCH INTO TEACHING



## TEACHING AND LEARNING RESEARCH EXCHANGE

# Unleashing the Power of Collective Intelligence

How Engagement with Authentic  
Learning Communities Impacts the  
Ability of Children in Poverty to  
Become Effective Problem Solvers

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Team learning is vital because teams, not individuals, are the fundamental learning unit in modern organizations. This is where the rubber meets the road; unless teams can learn, the organization cannot learn. (Senge, 2006, p. 10)

When teams are truly learning, not only are they producing extraordinary results, but the individual members are growing more rapidly than could have occurred otherwise. (Senge, 2006, p. 9)

# Introduction

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## RESEARCH QUESTION

How will engagement with authentic learning communities impact the ability of children in poverty to become effective problem solvers?

## THE PURPOSE AND OBJECTIVES OF THE STUDY

### PURPOSE

1. To create our own “recipe” (Eaker, DuFour, & DuFour, 2002, p. 2) for an authentic learning community model through which our children will learn to become effective problem solvers;
2. To improve problem solving scores in mathematics and the capacity of students to solve real problems in other areas of Saskatchewan curriculum and in the real world through the implementation of authentic learning communities;
3. To collaborate—to discover and implement best practices in order for our children to become confident and effective problem solvers and problem posers; and
4. To recognize that “the process of searching for answers is more important than having the answer.” (DuFour, DuFour, Eaker, & Karbanek, 2004, p. 4).

### OBJECTIVES

1. To “harness the power of collective intelligence” (DuFour et al., 2004, p. xiii); to be able to solve problems effectively and efficiently.
2. To work interdependently to achieve a common goal—to help children in poverty become more successful problem solvers in school and more importantly, in the real world.
3. To utilize the work of the Saskatchewan Ministry of Education related to School<sup>PLUS</sup> as well as the works of Richard DuFour, Robert Eaker, Michael Fullan, Larry Lezotte and Ruby Payne in order to create our own framework to improve student outcomes, specifically in problem solving.
4. To improve the skills of interpreting and of making sense of problems while collectively developing a tool box of strategies so that our children’s success is “merely a function of solving one simple, manageable problem at a time” (DuFour et al., 2004, p. xiii).
5. To improve student achievement—there will be ongoing observation, monitoring, measurement and adjustments until real progress and real results can be seen. As well, we will provide our children with ongoing feedback in order to stimulate their excitement, their accomplishments, and sense of self-confidence while solving problems. (DuFour et al., 2004, p. xvi)

6. To attempt to obtain mastery of the math-related objectives documented in Sacred Heart Community School's Proficiency Targets.
7. To work collaboratively with the University of Regina Faculty of Education so that our students consider and eventually realize a dream of one day going to a post-secondary institution.
8. To provide the Faculty of Education pre-service teachers with an opportunity to explore the wide range of possibilities for learning.

## RATIONALE

According to Ruby Payne in *A Framework for Understanding Poverty* (2001), "The key to achievement for students from poverty is in creating relationships with them" (p. 142). By partnering with the University and creating another support system, it was our hope to build another authentic relationship in which academic achievement could be nurtured. Ruby Payne sums it up best in saying, "for students from poverty, the primary motivation for their success will be in their relationships" (p. 146).

Our hope and dream for our students was that they would improve their ability to solve problems effectively in their world. According to Bill Daggett in a presentation at the 2002 Model Schools Conference in Washington, DC, "the primary focus of schools is to prepare students for the unpredictable world of tomorrow."

In order to see this through, we nurtured some of what was already present at Sacred Heart as the base for our learning communities: unique grade splits; team teaching; cooperative and collaborative learning; and group dynamics enabled by classroom settings that, for example, used tables instead of desks. As we worked through a variety of problems together, it was our hope that the new group dynamics would allow each member of the learning community to realize his or her own strengths and abilities as well as to celebrate and to capitalize on the gifts and talents of the other members.

# Research Project

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## DESCRIPTION OF THE STUDY POPULATION

Sacred Heart Community School is an inner city school located in Regina, Saskatchewan. Eighty-five per cent of our students are of Aboriginal ancestry and the majority live in poverty. Over the course of the last ten years, we have successfully implemented many unique changes in our school in an effort to meet the needs of all of our students—socially, emotionally, physically, spiritually and intellectually. Over the last six years, the University of Regina has played a crucial role in supporting many of the projects and initiatives going on within our classrooms.

In the fall of 2001, we were fortunate to partner with the University in a project aimed at helping our students become aware of math concepts that present themselves in our everyday environment. A team from the University created a Math Trail specific to our students' community. To view the project, please connect to the website: <http://education.uregina.ca/mathed/elementary/Fall%202001/SHMathTrail.html>

In the Winter 2002 semester, Early Childhood pre-service teachers (prekindergarten to grade 3) in the Faculty of Education at the University of Regina were paired with 18 grade 3 children at Sacred Heart Community School. They corresponded with one another through an interactive online client/server software program called Journal Zone.

The intention was for participants to write and to illustrate journal pages to highlight what they were doing and learning about in mathematics, to access the journal pages of others in the project—especially those paired together, and to write comments on the journal pages of their colleagues. Beth Warkentin and Vi Maeers from the University of Regina Faculty of Education were interested in the viability of this program for mathematical understanding and hence collected and analyzed data to determine the usefulness of such a tool in learning mathematics.

## DESCRIPTION OF THE TEACHING AND LEARNING ENVIRONMENT

The learning environment at Sacred Heart Community School is very different from traditional schools. These differences were described in a previous McDowell Foundation research project carried out at our school called *Project "X" (Excellence) "Our Jacob" Became "Our Jesus"*. More information about how our school differs from the traditional school model may be found in the report on this project, which is posted on the McDowell Foundation website.

Best practices driving our learning environment include: brain-based learning, cooperative learning, experiential learning, guided reading, and quality daily physical education. Over the course of 11 years, some unique grade combinations have evolved in our school to meet the many and diverse needs of the students. Table 1 shows these combinations in the school year that our research began.

**TABLE 1: STRUCTURE FOR THE 2005-06 SCHOOL YEAR**

Grade Level	Number of Classrooms
Preschool	1
Prekindergarten	1
Kindergarten	2
1 / 4	4
2 / 6	3
3 / 7	3
5 / 8	3

For the purpose of this research, the focus was on the students and teaching methodologies in the grade 2/6 classrooms. Table 2 shows the teachers and the students in each of these three classrooms.

**TABLE 2: STUDENT POPULATION IN THE GRADE 2/6 CLASSROOMS**

Teacher	Number of Gr. 2 Students	Number of Gr. 6 Students	Males	Females
Adam Ward	13	9	10	12
Heather Gantefoer	9	9	7	11
Terri Coté	13	9	11	11

Sacred Heart Community School utilizes brain-based learning strategies centred around Howard Gardner's Theory of Multiple Intelligences. In the grade 2/6 classrooms, the learning is designed with student interests at the forefront. We work very hard to ensure that learning is contextual.

On a daily basis, teachers structure learning so that students are able to work in teams, solving real-world problems. Through our partnership with the University, we are encouraging our students to also learn in environments outside of the classroom and the school building.

## RESEARCH METHODOLOGY

We worked collaboratively with the University of Regina Faculty of Education to establish the best methods and practices for collecting and analyzing data. Our data were used to further drive our quest for academic excellence in all areas of curriculum. It was also used to evaluate and to revise our own recipe for an authentic learning community model in which our children will enhance their problem solving skills. The composition of the learning communities included a variety of ages (comparable to what one would find in a family or business situation), ability levels (from adapted programming to extended learning programs), and background experiences (multicultural, social and economic conditions). These learning communities included University facilitators/advisors, teachers, pre-service teachers, students, and hopefully some families from Sacred Heart Community School. Initially, the focus of the learning communities was to improve problem solving abilities in the area of mathematics and the plan was to extend the focus into reading and social studies in an integrative way.

We began our project with a paired-shared problem solving interview in which the reflective process was the focus. The Sacred Heart students interviewed the pre-interns and asked them to reflect upon the ways in which they solved problems in their

everyday lives. The pre-interns reciprocated the process, and together the students and pre-interns realized that they shared a common ground in the ways in which they solved real-world problems. This exercise was the beginning of our relationship building and the starting point for improving the skills of interpreting and making sense of problems.

Our first trip to the University served two purposes. First, we wanted our students to be exposed to a university located in their larger community. Second, we wanted to emphasize the importance of reading so that the pre-interns and students would work together to create a book talk. Through this project, the PLC used a team approach and assisted one another when problems presented themselves. During the winter months, our focus was on math and social studies. The math project included a problem solving and assessment project at Sacred Heart Community School, a parent/student math evening, as well as a Math Fair, with a focus on problem solving, held at the University. In the spring, our connection was through a Social Studies Heritage Fair at which students were actively engaged in “a process where searching for the answer as a team was more important than having the answer” (DuFour et al., 2004, p. 4).

Further data were then collected and compiled from anecdotal notes, student work, Canadian Test of Basic Skills, Math 2/6 and the PM Benchmark program

## PROBLEMS AND LIMITATIONS

As a team, we felt that time was a factor. It would have been advantageous for the students to have had more time with the pre-service teachers from the University of Regina. It takes time to build relationships and to learn and to refine problem solving skills.

While we had hoped to have strong parent involvement in our learning communities, this proved to be very difficult to achieve. We did hold a “Night Out in Math Town” for our students and their parents; however, due to a number of different circumstances, a limited number of parents (only 15 out of 62 families) attended.

## SUMMARY OF THE DATA

The physical set-up for the days that we spent together worked very well for both the boys and the girls. Typically, boys are more kinesthetic learners while girls tend to learn by listening and to work out problems in groups. Both boys and girls were able to physically move around when their classes were together with the pre-service teachers, which allowed them to work their way from problem to problem. Students worked individually and in small groups, gathering information and problem solving together. The stations set up by the pre-service teachers were created to present problems that had many solutions. We were pleasantly surprised at how our students worked collectively to achieve the goals for the day.

We began our project by talking about and by explicitly teaching our students what is an effective and ineffective problem solver. Our teaching was based on a chart developed by Fogler and LeBlanc (1994), but to assist our students in developing a basic understanding of these concepts, we rewrote the chart using language our students could readily understand. The rewritten chart may be found in Appendix B.

Using the revised chart we asked our students to rate their problem solving skills at the beginning and at the end of the year. The results are shown in Table 3.

**TABLE 3: STUDENTS' RATINGS OF THEIR OWN PROBLEM SOLVING SKILLS**

Problem Solving Skills As Rated by Student	Beginning Grade 2	End Grade 2	Beginning Grade 6	End Grade 6
Effective	3/35	15/35	3/27	10/27
Effective/Ineffective	1/35	13/35	5/27	10/27
Ineffective	31/35	7/35	19/27	7/27

The teachers also rated the students' problem solving skills at the beginning and at the end of the year, with the results shown in Table 4. The teacher ratings were based on classroom observations only.

**TABLE 4: TEACHER RATINGS OF THE STUDENTS' PROBLEM SOLVING SKILLS**

Problem Solving Skills As Rated by Student	Beginning Grade 2	End Grade 2	Beginning Grade 6	End Grade 6
Effective	3/35	13/35	No data collected	No data collected
Effective/Ineffective	12/35	17/35	No data collected	No data collected
Ineffective	20/35	5/35	No data collected	No data collected

## MATHEMATICS DATA

For a number of years in our school, we administered the Canadian Test of Basic Skills (CTBS) to track our students' academic progress in math. For this specific project, we took the CTBS test results for the same group of students over a two-year period.

### GRADE 1 - 2005

At the end of grade 1, the students in our project had a Total Composite Math Score of 1.3.

### GRADE 2 - 2006

At the end of grade 2 and at the completion of this project, this same group of students had a Total Composite Math Score of 2.2. The data show that our students did progress almost a whole year. In comparison, it is worth noting that the grade 2 class from the previous year (2005) had a total composite score of only 1.8.

### GRADE 5 - 2005

At the end of grade 5, the students in our project had a Total Composite Math Score of 5.2.

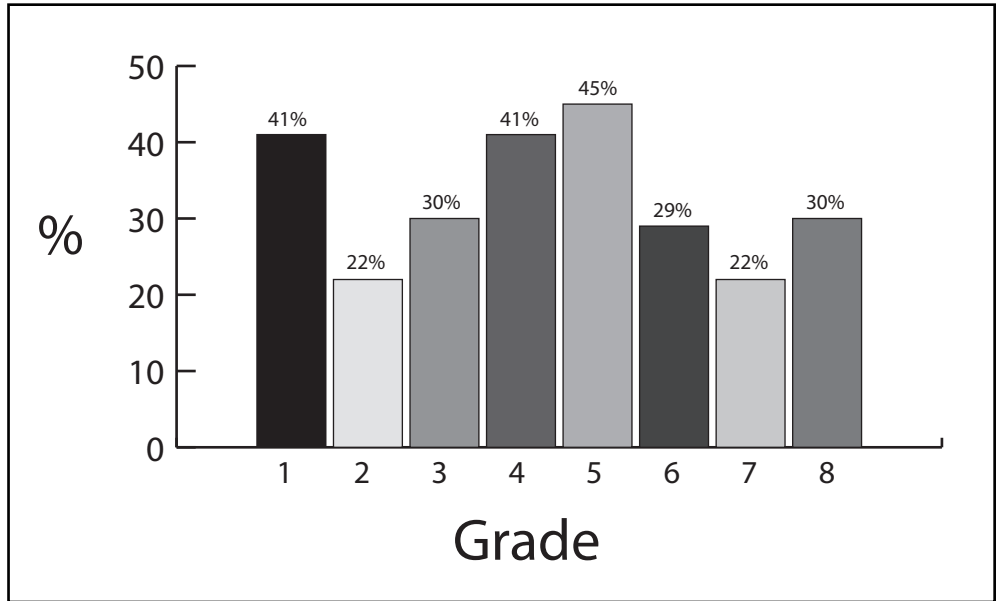
### GRADE 6 - 2006

At the end of grade 6 and at the completion of our project, this same group of students had a Total Composite Math Score of 5.5. The data show that our students progressed very little. In comparison, it is worth noting that the grade 6 class from the previous year (2005) had a total composite score of 5.4, which shows that there was minimal growth.

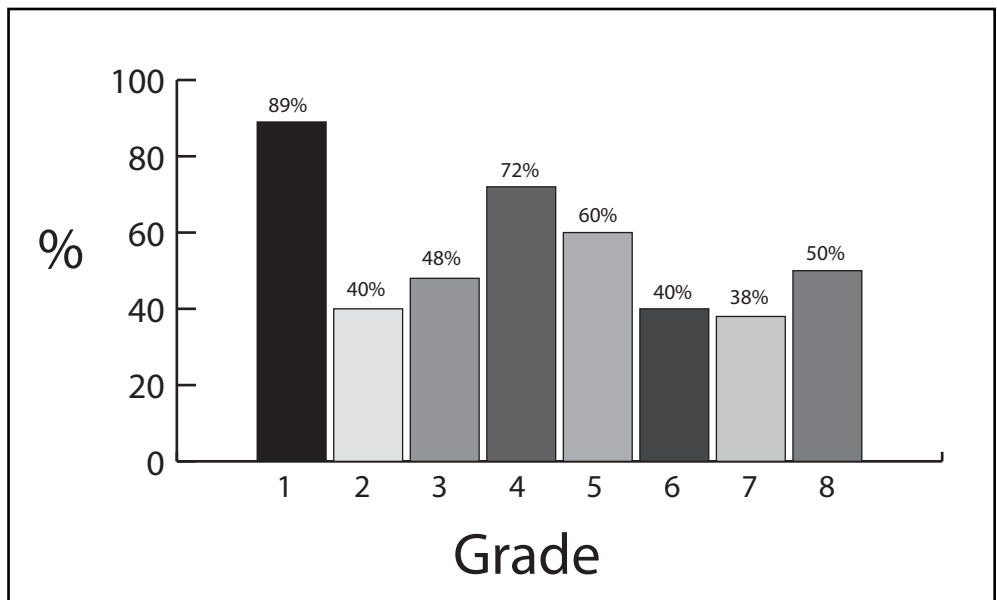
# BENCHMARK DATA

For a number of years, we have administered the PM Benchmark to track our students' reading progress. For this project, we took the results for the same group of students over a one-year period. We have included the reading results in our study because problem solving in math requires students to read and to comprehend, and the problem solving project was extended beyond math to include English language arts and social studies.

**FIGURE 1: % OF STUDENTS READING AT OR ABOVE GRADE LEVEL FOR REPORT PERIOD 1, NOVEMBER 2005**



**FIGURE 2: % OF STUDENTS READING AT OR ABOVE GRADE LEVEL, JUNE 2006 GUIDED READING**



## QUALIFICATION OF DATA

A number of contributing factors may have affected these test results:

- The grade 2 students showed more growth than those in grade 6 because they were more excited and more interested in the project.
- The younger students tend to progress more rapidly than older students.
- Teachers and relationships make a difference.
- The time of the year that the testing was conducted may have affected the results.

Our benchmark data showed that the number of students in both grade 2 and grade 6 reading at or above grade level increased. How much of this increase was due to the effect of working in authentic learning communities is undetermined. However, we feel that our students' reading and comprehension skills could not help but be influenced by the positive interactions we witnessed.

## STUDENT REFLECTIONS

Student reflections were obtained through journal entries, brainstorming sessions, and taperecorded interviews. Below is a sample of comments from Sacred Heart Community School students.

### BEFORE THE RESEARCH PROJECT

*I don't like working in a team. I am better just doing it myself.*

*I don't have anybody to talk to when I have to solve a problem.*

*I am the oldest in my family so I have to figure things out for myself.*

*Sometimes it's just easier to work alone if you are a "self-smart" person.*

*Sometimes it is easier to solve problems by yourself so you can think to yourself.*

*I don't believe that I can solve problems myself.*

*I don't know where to start to solve some problems.*

*No one has ever shown me how to solve problems.*

### DURING THE RESEARCH PROJECT

*When I had a problem, my U of R partner talked with me and gave me some other ideas that I hadn't thought of before.*

*I took time to think and bounced ideas back and forth with my group.*

*In a group you can ask questions, get help, and share ideas when you are trying to solve a problem.*

*In a group you have people you can talk to and share your feelings with when trying to solve problems.*

*In my life I have always felt alone and it's good to know that there are older people out there that care about me and want me to do well.*

*If I have a problem that is too hard, I just quit.*

## **AFTER THE RESEARCH PROJECT**

*I am going to try my best to solve problems. I hope that I can remember everything my teachers taught me this year.*

*It's ok to ask for help when trying to solve problems.*

*I am always going to start with what I know first. That way I am not just sitting there for a long time.*

*I hope that when I get a job I will work with people who will want to solve problems together.*

*If you break problems down into small parts, they are easier to solve.*

*There are no problems too big to solve.*

*I thought that problem solving was just in math. I learned that problem solving strategies can be used in lots of things.*

*I am a better problem solver now than I was at the beginning of the year.*

## **PRE-INTERN REFLECTIONS**

Below is a sample of observations the pre-interns made about their experiences working in an authentic professional learning community (PLC) with a focus on problem solving.

*I could really notice the evidence of problem solving as I observed the different groups working together. We worked together to find the answers.*

*Gender was not an issue in the PLC. The boys and girls worked well together, sharing ideas and working to solve problems.*

*I didn't really notice different ability levels within my PLC. The students in my group all worked together and where one couldn't find the answer, someone would help.*

*I encouraged the older students to be leaders for the younger students so they could help them find the information they were looking for.*

*The students in my PLC were very interested in finding the answers and took time to ask me lots of questions.*

*I could see that the students in my PLC were developing and using strategies to solve problems.*

*The Grade 6 girl was excellent at knowing how to work with younger students—she was patient and a great role model. She had strategies to teach me!*

*I found that working hard to establish relationships early was the key to success in my PLC.*

*I discussed with my colleagues the different strategies I could use to solve problems within my PLC and asked them how they were managing with their groups.*

*I was amazed at how well the students worked together. Many of the older students took on a role model position and assisted their classmates. However, the younger students were also able to help their classmates in a variety of ways as well.*

*These PLCs create an inclusive environment for all students and allow them to function at their own individual levels.*

*More than anything, seeing the positive interactions has made me realize the benefits of cross-age PLCs.*

*I see the benefit of forming trusting relationships. This will help them to build self-confidence and reduce anxiety when problem solving.*

*I think I was able to give the students in my PLC some strategies they can use to help them become better readers.*

*The one aspect that I discovered by working with my PLC from Sacred Heart School was the fact that they use cooperative learning; they share and act as team players.*

*This experience is going to make me a better teacher and team player. I have had the opportunity to work with students and classroom teachers that show through their practice what an authentic learning community looks like.*

## TEACHER REFLECTIONS

The following reflections were provided collectively by Terri Coté, Heather Gantfoer and Adam Ward as the teachers involved in the project.

*From the very beginning of our careers, we have been involved in a number of projects in an effort to improve the academic, social, and emotional well-being of our students. Working with children in poverty is very challenging and rewarding all at the same time. The dynamics have forced us to do in-depth research on how to best meet the needs of our students. We have been privileged to hear Dr. Ruby Payne speak of her experiences and were fortunate to have her visit our school. We have and continue to “hear her voice” as it reminds us of the importance of building relationships. It is only through relationships that our students have opportunities to experience academic success. In the past we have had to be creative in order to secure limited amounts of money so that we were able to connect our students to the*

*outside world. We are grateful to Vi and Beth for encouraging us to apply to the Dr. Stirling McDowell Foundation because we have been doing informal action research for many years, but have never documented or reflected upon our findings.*

*At the beginning of the 2005-06 school year, we observed that the majority of our students were shy, unmotivated individuals who had very limited problem solving skills. They had never had opportunities to lead or to work in an authentic professional learning community where common goals would be achieved. We spent a lot of time teaching them problem solving and cooperative group skills so they would experience success when working in a professional learning community.*

*As the year progressed, it was exciting for us to observe students using problem-solving skills, learning and leading within their PLCs and loving every minute of it. After each trip to the University the first question when we boarded the bus was, "When do we get to work with our university partners again?" In the university setting, we observed students who were working to their fullest potential, taking pride in their work, and displaying confidence and enthusiasm. We feel this was a result of directly instructing problem solving strategies and cooperative group skills that could be used within the new professional learning communities that had been created.*

*Upon much reflection, we have discovered the importance of direct instruction in order to give our students a toolbox of problem solving strategies, as well as to model to our students what an effective PLC looks like. We realized early on that this experience was going to be beneficial to everyone involved. The learning was not isolated to our students and the pre-interns, but extended to our colleagues at our school and out to the parent community. There were many lunch hour discussions as people were curious about the project we were doing with the University of Regina. Initially, we did not plan to include the parents in our PLCs, because we were acutely aware of the difficulties involved to achieve that goal. However, we knew that more parent education and involvement was important. We were pleasantly surprised by the turnout at "A Night Out in Math Town" and were thrilled to hear that some of the students were actually doing math problem solving activities at home with their parents.*

*Throughout this project, we nurtured some of what was already present at Sacred Heart as the base for our problem solving learning communities: unique grade splits, team teaching, cooperative and collaborative learning—group dynamics because of classroom setting (tables instead of desks). As we worked through a variety of problems together, we saw that the new group dynamics allowed each member of the learning community to realize their own strengths and abilities as well as to celebrate and to capitalize on the gifts and talents of the other members. This applied to the teachers and faculty members as well.*

# FACULTY MEMBER REFLECTIONS

## TWYLA MENSCH

### **Background:**

*The early childhood pre-service teachers completed a Heritage Project Assignment about a chosen historical component that related to the Saskatchewan Elementary Social Studies Curriculum. A variety of topics featured heroes, historical sites, museums, urban and rural communities, as well as past historical events. The topics were developed into a visual display that created pictures and key facts about the chosen topic.*

*From the beginning, the pre-service teachers had the opportunity to plan the final event where the heritage displays would be part of a viewing event for the Sacred Heart grade 2 and 6 classes. The pre-service teachers formed a committee of nine people to coordinate the event. The committee created and edited the key questions about each heritage display. This information was organized into a treasure hunt format so the elementary students could record their responses to the questions. Displays were showcased by topic or theme throughout three classrooms at the University of Regina. Each pre-service teacher was assigned two or three Sacred Heart students. In small groups, students began to complete the treasure hunt. The pre-service teachers assisted with problem solving to complete the questions, found assigned classrooms, and assisted with recording responses. The committee created a Treasure Hunt Certificate that each Sacred Heart student received upon completion of the questions.*

### **Reflections:**

*The Stirling McDowell Research Project was an incredible opportunity for the pre-service teachers in the Early Childhood Social Studies Curriculum class to collaborate with the grade 2 and 6 teachers and students at Sacred Heart Community School. This partnership helped to establish possibilities and dreams for creating learning opportunities for both elementary students and the pre-service teachers. The enthusiasm from Terri, Heather, and Adam provided outstanding modelling to the pre-service teachers and conveyed the importance that all children need opportunities to experience new environments, which was implemented with visits to the University of Regina.*

*As a post secondary instructor, my role was to facilitate an assignment that would encourage working cooperatively with the Sacred Heart students and the early childhood pre-service teachers. The pre-service teachers identified that the Heritage assignment had a purpose since children would actually interact with the displays. This provided value to researching a particular topic and thinking about how to present the topic in an age-appropriate way. In preparation for the event, planning time, access to storage, and materials was available throughout the semester.*

*The pre-service teachers identified that by visiting each display with the Sacred Heart students, an opportunity was created to learn about all the various topics that reflected the Saskatchewan curriculum. Pre-service teachers made connections to how various topics were linked*

together and the importance of having both urban and rural events and locations. The pre-service teachers discovered how many opportunities for learning exist in our own community.

## **WENDY WILLIS**

### **My Role:**

*I was the instructor for ERDG 215, Section 40 for the Fall 2005 Semester. My students created Symbolic Book Talks in my class. Symbolic Book Talks are listed as an instructional approach in the Saskatchewan English Language Arts Curriculum K-5. Students chose a piece of literature and then collected symbols that represented the story. The symbols were put inside a container that displayed the title of the book, author, and illustrator. Many students included an illustration on the container. Students had time in class to work on the project and share the final project with others.*

*My students met with the children from Sacred Heart at the University. The children from Sacred Heart had selected a piece of literature to create a similar book talk. My students and the students from Sacred Heart were paired up to complete this. My students presented their book talks to the young students. They then were able to create their own book talk.*

### **My Reflections/Comments:**

*This project was very successful through the cooperation of the teachers and students from Sacred Heart, as well as the instructors from the University of Regina. The teachers from Sacred Heart had assisted the children in selecting the literature to create a book talk. The children brought this book to the University. The children were well prepared to attend the learning event at the University.*

*Several of my colleagues worked with my group of students to prepare materials and to plan for the event at the University. Each student completed a reflection from the experience that was provided to the research team. The collaboration of the University instructors was necessary for this to be successful.*

*The experience was rewarding in debriefing the event with my students. There were many insightful comments from my students. They were required to problem solve while working with the young students. Many students commented on the range of reading and ability levels of the young students. They needed to adapt to successfully accommodate for these differences. It was a positive experience because they were able to work with children and to put theory into practice from their University studies.*

## **BETH WARKENTIN**

*As I reflect on our project, Unleashing the Power of Collective Intelligence, I am awed by this "power," in addition to promoting learning, unleashing confidence, pride, and positive relationships in all those who played a part in the project experiences. What resonates for me is the excitement and active engagement generated through reciprocity and teaching and learning together. How enriching to learn with each other—teachers and pre-service teachers with students, students with students, and families with students and teachers. In addition, the University professors gained knowledge that will impact their undergraduate courses in elementary teacher education. They saw the value of collective intelligence for all the players involved. All of us could see the endless possibilities for rich learning initiated by the project. Future experiences generated by projects such as these can only enhance education for all!!*

# Recommendations

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Professional learning communities are not something in which most parents, and even some teachers, have engaged. More teacher education and time in schools is needed to make this collective, collaborative team approach a reality and beneficial to students in the education system.

As this research project has shown, one of the key factors to achieving academic results in poverty situations is relationships. The learning communities that we created with our students, the pre-service teachers, and faculty members at the University of Regina met the academic, social, and emotional needs of all of our students. Our students saw the learning community as a team of individuals who were working together to achieve a common goal; they saw that if something wasn't working, it could be changed so that everyone was experiencing success. Our students felt empowered and were making meaningful decisions for themselves and the groups in which they were working.

Individuals learn by being engaged in meaningful ways—ways that make sense and are connected to the real world. It is our hope that our colleagues will realize that through the implementation of professional learning communities that involve not only the professionals inside our school buildings, but students, their parents and interested stakeholders in the outside world, students will reach their fullest potential. Unfortunately, there is not one recipe that exists for professional learning communities that would work in all schools. However, a shared mission, vision, values and goals provided the foundation for all of the decisions that drove our project. We worked interdependently to achieve the common goals.

A longer timeline would have been helpful to jointly analyze student achievement data, to draw conclusions, and to establish team improvement goals with our partners from the University of Regina. However, in the year of the project, we created a great support system, sharing strategies and materials that had a positive impact on our students.

Furthermore, our project gave the pre-service teachers an opportunity to participate in an authentic learning community and to be reflective practitioners. Extended professional learning communities could be incorporated into teacher education programs at the university level and would benefit everyone involved.

It would be a celebration if in every school and in every town, city, and province, the world would look around and say: Look at them! “They work together in an ongoing effort to discover best practices and to expand their professional expertise” (Eaker et al., 2002, p. 5). Jensen (1996) agrees:

The old model of learning ostracized the learner if he/she asked other students for help. This mindset encouraged competition rather than cooperation. Today's learning takes many shapes; sometimes it's quiet, other times, noisy; sometimes you'll learn best by yourself, other times with a group. The most important thing is this: Learners ought to be encouraged to seek help from each other. In fact, the ideal is when teachers, parents, students, administration and community all work together in an atmosphere of trust, mutual respect and cooperation. (p. 83)

# Conclusion

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*Unleashing the Power of Collective Intelligence* was a research project that exemplified a number of the recommendations set forth in *School<sup>PLUS</sup>: A Vision for Children and Youth* (2001). This year-long project mirrored the community school philosophy of collaboration, staff development, shared power and team work, meaningful student consultation, and parents as partners. In addition, it addressed the interagency component and the pre-service teacher education recommendations. Since the completion of our project, we are pleased to say that we have continued to be involved with others in our community who are interested in being a part of our school learning environment.

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# Appendix A: Photo Consent

Note: All students had parental/guardian consent forms signed for photographs prior to starting our project.

## **PARENTAL/GUARDIAN CONSENT**

**STUDENT NAME:** \_\_\_\_\_ **GRADE:** \_\_\_\_\_

Dear Parents/Guardians of Regina Catholic Schools' Students:

Schools within Regina Catholic School Division No. 81 often receive requests from various groups, agencies, organizations and individuals for personal and private information (i.e. name, date of birth, address, postal code, telephone number, etc.) While we recognize the need to comply with the laws governing the release of such information, there are certain groups for whom we are requesting your approval for release of this information.

If you are in support of our releasing your child's personal information to the following groups, please sign below.

- Regina Health District for Immunization, speech/hearing/vision screening
- Dental Health for dental screening
- Church for sacrament preparation

I also give permission to the Regina Health District to release my child's speech and language/hearing/vision screening results to the appropriate school personnel.

\_\_\_\_\_  
(Parent/Guardian Signature)

## **PHOTO CONSENT FORM**

\_\_\_\_\_, of Regina, Sask., parent/guardian of \_\_\_\_\_  
(PARENT NAME) (STUDENT NAME)

hereby **do** or **do not** consent to photographs being taken by personnel employed by or hired by Regina Catholic Schools for educational, advertising or other such purposes as deemed appropriate by the Regina Catholic School Division and I also give consent to my child being photographed and video/audio recorded and interviewed by members of the media including newspapers, television and radio.

## **PARENTAL EXCURSION CONSENT FORM**

I hereby grant permission for my son/daughter \_\_\_\_\_ to be taken on excursions out of Sacred Heart School within the city of Regina limits. This is signed with the understanding that these are planned excursions, which have the approval of the Principal and are supervised by teachers.

\_\_\_\_\_  
(Signature of Parent or Guardian)

## **PARENTAL CONSENT FOR SPEECH & LANGUAGE SERVICES**

As part of the regular Sacred Heart Community School speech program, all new students may be tested to check their speech and language skills. Your signature will indicate your agreement to have your child's speech and language skills assessed and possible programming provided. You will be notified of the test results and if required, the programming needs.

Date: \_\_\_\_\_  
\_\_\_\_\_  
(Parent/Guardian Signature)

# Appendix B: Rubric

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## Characteristics of Effective/Ineffective Problem Solvers

- Based on Fogler and LeBlanc (1994) and designed for Grade 2/6 students.

Look For....	Effective	Ineffective
<b>Attitude</b>	I believe I can solve the problem.	I give up easily.
<b>Actions</b>	I read the problem more than once.	I hope the answer will come to me.
	I put the problem in my own words.	I need more practice putting the problem in my own words.
	I ask questions.	I need more practice asking questions.
	I can see the problem in my head.	I need more practice trying to see the problem in my head.
	I draw pictures.	I need more practice drawing pictures.
	I make number sentences.	I need more practice making number sentences.
<b>Accuracy</b>	I check my answer.	I do not check my answer. When I am done, I am done.
<b>Solution/ Procedures</b>	I break big problems into small problems.	I need more practice breaking big problems into small problems.
	I start with what I know.	I don't know where to start.
	I use what I already know to help solve the problem.	It is hard to remember what I have learned.
	I never quit.	Most of the time I give up

# Appendix C: Letter to Parents

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October, 2005

Dear Parents/Guardians,

We would like to invite you to “A Night Out in Math Town” presented and planned in conjunction with the University of Regina pre-service teachers and faculty members, as part of our “Unleashing the Power of Collective Intelligence” project. This will be an excellent opportunity to see your child work through a variety of math problems. Starting at 5:30, we will serve bullet soup and bannock. At 6:00 we will begin moving to the rooms where the University of Regina pre-service teachers have prepared a variety of hands-on math stations for all of us to experience. The pre-service teachers have been working very hard over the last couple of weeks, preparing the math stations for us. We look forward to seeing you on Tuesday. We really appreciate your support and your input is valuable to us.

Your Partners in Education,

Terri Cote, Heather Gantfoer, and Adam Ward

# Appendix D: PowerPoint Presentation on Project

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## Unleashing the Power of Collective Intelligence



HOW THE ENGAGEMENT WITH AUTHENTIC LEARNING COMMUNITIES IMPACTS THE ABILITY FOR CHILDREN IN POVERTY TO BECOME EFFECTIVE PROBLEM SOLVERS

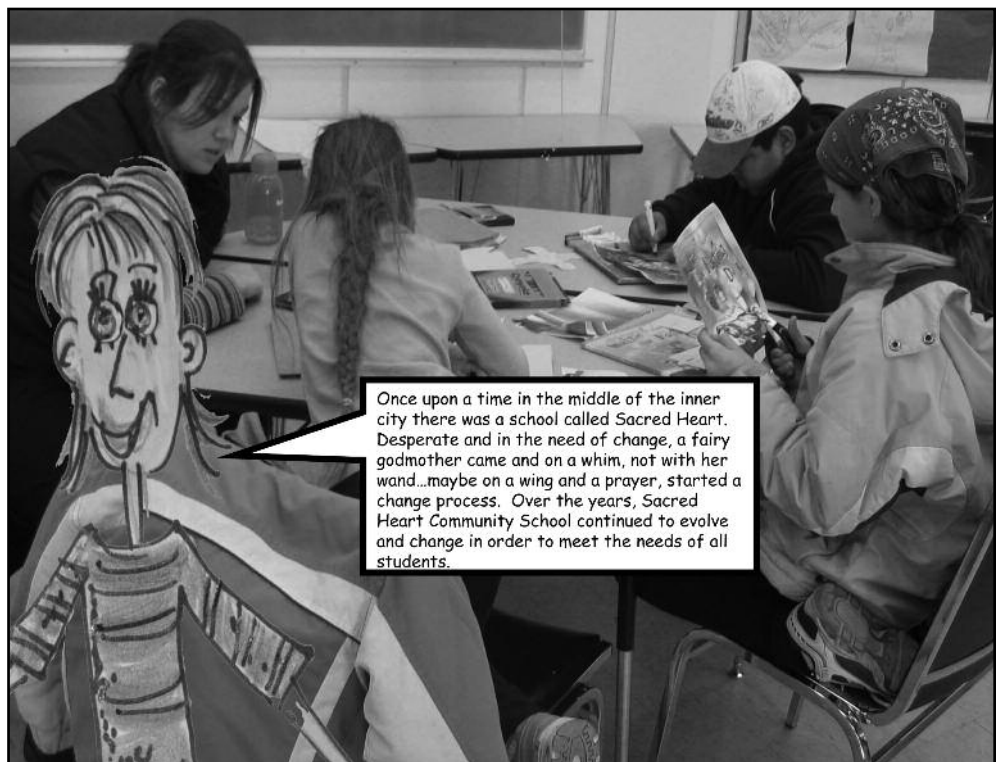
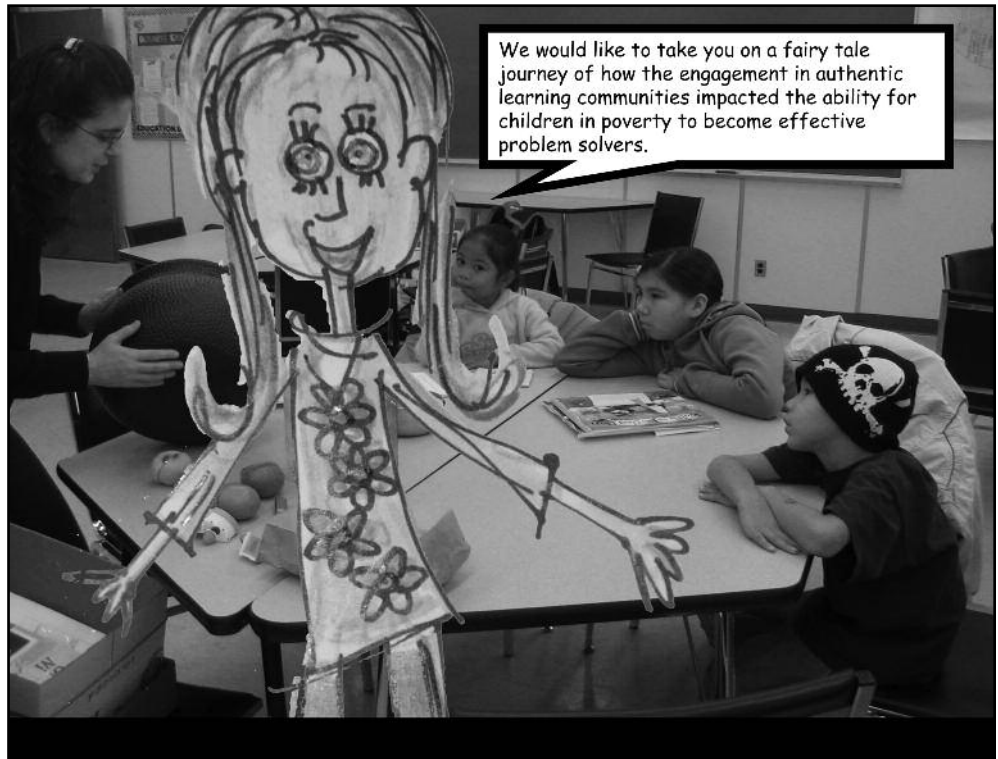
## Oh, the Changes We've Seen... and the Places We've Been!

For those of you who are willing to take a risk and embark on a change process in your school...

"Congratulations! Today is your day...you're off to great places...you're off and away!"

*Oh, The Places You'll Go by Dr.Seuss*





Another Fairy Godmother named Vi appeared and planted a seed, suggesting that it was the right time for some action based research. The children were poised socially and academically. There were passionate, willing and excited teachers that were up for the challenge. They believed that their students could become effective problem solvers in all subject areas by engaging in authentic learning communities.



Three blind mice, named Heather, Terri and Adam, didn't know what they were headed for, but set off together to attack a McDowell Foundation research project.









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