

CHAPTER FIVE DATA COLLECTION AND ANALYSIS

5.1 Framing the Results

Using action research as a tool allowed me to make on-going changes to the way I facilitated literacy-teaching in my school. As I alluded to in earlier chapters, everything I heard from teachers, parents, and my superiors reassured me that I had been successful. But was I hearing representative and unbiased opinions? Or were people telling me what they thought I wanted to hear? Were the positive comments an artefact of all the many other changes that we had made in the school? Or were the children's literacy test scores really affected by my literacy initiatives? To answer these questions as honestly as I could, I decided to collect data from a variety of sources, as objectively as possible, and then to analyze these data as rigorously as possible. I decided in my final reflective action research cycle that only an objective and rigorous analysis would take the research beyond a self study to help develop a strategy for my own professional development as a principal, and might inform other principals looking for answers to the same kind of question. The rigor I sought is best supported by the work of T. D. Jick, (1983),

...the effectiveness of a leader may be studied by interviewing the leader, observing his or her behaviour, and evaluating performance records. The focus always remains that of the leader's effectiveness but the mode of data collection varies. Multiple and independent measures, if they reach the same conclusions, provide a more certain portrayal of the leadership phenomenon.
(p. 136)

While I was organizing this body of data for analysis, I recognized many similarities with ethnographic research and drew on the work of LeCompte and Schensul (1999) for both qualitative and quantitative data analysis.

5.2 Data Collection

In this section, I will describe the various types of data I collected to answer my research question “How do I as a principal improve my practice to enhance the teaching of literacy?” These data comprised reflective journal entries, course assignments, email correspondence, the results of a questionnaire given to informed respondents and the students’ literacy scores. Because I was inviting examination and comment on my practice from people with whom I was in a power relationship, I needed to take account of ethical considerations and I will describe the steps I took to do so. I will then analyze both qualitative and quantitative data, and end the chapter with a chart that shows how I triangulated my claims. My final chapter will discuss the differences in my perceptions about my work and what I was doing to enhance literacy as compared to those of the respondents in how they viewed my practice and my effectiveness in changing how we delivered literacy to students.

5.2.1 The Qualitative Data

I collected 213 pages of action research field notes that were written as reflective journal entries during the time of my principalship in the school. They include my views about conversations and interviews with critical friends. My journal entries mostly consist of head notes and scratch notes. Borrowing from the work of Sanjek, LeCompte and Schensul (1999) describe head notes as, “...memories or mental notes kept ... until such time as it is possible to actually write things down” (p. 31), while scratch notes are jottings written right after an event when it is inappropriate to write during the event. My journal entries have been

preserved in their raw form without any revision and included as vignettes that appear throughout the earlier chapters. They describe in ontological context what events were taking place in the school, provide an account of my challenges as I saw them and detail my inner struggle as to how I could improve my practice.

My field notes include approximately 100 pages of action research graduate course work that I took while conducting my study and provide rich clips of what was happening during these periods. Of all my field notes, this work is the most richly detailed as my experiences, values, and personal insights benefited from the additional reflection that resulted from my course assignments. My assignments constructed and refined the action research lens for my study and also detailed the evolution of topical areas that I pursued as my research evolved.

Another source of data is a collection of emails over a six-year period containing correspondence between me, my teaching staff, senior administration and my critical friends, capturing relevant points about literacy such as: the planning of professional development; the promotion of upcoming workshops and conferences; the organization of cycle team meetings; the school's assessment practices; the required supports for our harder-to-serve students; and the citing of research articles and websites.

5.2.2 The Quantitative Data

These data consist of a two part questionnaire – questionnaire (Part A) and anecdotal questions (Part B), and grade two students' reading scores. The collection of this information provided for a more objective analysis of my practice and the literacy improvements that occurred during my term as principal.

5.2.2.1 The Questionnaire

The final pieces of my data were collected as my study drew to a close when I searched for a way to answer the question: Did I make a contribution to enhance the teaching of literacy and if so, how effective was I in my role? To acquire the answer to this critical question, I decided to formulate an on-line questionnaire given in Appendix D.4 and ask the professionals working with me and the parents of my Governing Board directly about my literacy initiatives in the school. The purpose of the questionnaire was not only to gather evidence whether I had improved literacy-teaching but also to learn how I could further improve my practice. I therefore needed to know which of the literacy interventions were most effective and to be able to rank them. I also wanted to be able to report what strategies were most effective and thereby offer some insights for future literacy researchers. Finally, my findings had to be trustworthy to contribute new knowledge about improving the practice of a literacy principal.

To obtain meaningful feedback, I required questions that would not be leading but would be relevant to my work. Additionally, I needed to exercise caution to safeguard against biases (LeCompte & Schensul, 1999; McNiff, et al., 1996, 2003; Mills, 2003; Zeni, 2001). I had already found Booth and Rowsell's (2002) work to be useful and I was now drawn to examine what strategies they believed that a literacy principal must consider when promoting effective school-wide literacy. From their list (Booth & Rowsell, 2002, p.76-78), I developed 31 questions for an on-line questionnaire. In doing so, I was not pre-determining the questions to ask and would be reducing the influence of my personal biases. For the purpose of my study, the focus of these questions was on the role of the principal and as such the teachers' roles were not examined. This stance does not negate the important role that teachers played in the literacy delivery and increasing student success.

In constructing the questionnaire, I chose a five point Likert scale in Part A in order to capture everyone's views by offering respondents a wide choice of options and thereby encourage a greater rate of response. Its second section (Part B) consisted of six open-ended anecdotal questions that had expandable boxes so that respondents could give as much input as they chose. A small group of researchers (critical friends) reviewed my questionnaire and led me to make some revisions for clarity and to ensure that each point on the Likert scale would be a distinct ordinal measure.

The 31 questions related to nine specific literacy interventions that were initiated within the school and whose genesis will be described later in this chapter. Each question evaluated my effectiveness in implementing one of these interventions. The order of the questions was meaningless within each of the three broad categories provided to the respondents and the respondents were not given any information on how the questions related to specific interventions. Appendix F lists the nine applied literacy interventions and the specific questions associated with the intervention.

I sent the questionnaire to three distinct groups who were in a position to observe the literacy interventions that I had initiated and fostered, and to give them voice: 1) all teaching staff (current and those who had recently departed), 2) all senior school board administrators who oversaw my work, and 3) all the parent Governing Board chairpersons during my term as the school's principal. I believed that the general parent population were not in a position to fully comprehend the extent of our literacy initiatives and be able to answer the detailed questions. However, the Governing Board chairs worked closely with me in previewing and discussing our students' reading levels and our school's literacy success statistics as we planned future Governing Board meetings and topics for discussion.

After obtaining ethical approval, an electronic package consisting of an invitation letter, the participant's consent form and the questionnaire was sent to 65 potential respondents (39 teachers, 8 parents and 18 administrators). In the letter shown in Appendix D.1 they were invited to complete the questionnaire, and I also explained the process put into place to protect everyone's anonymity. Respondents were informed that they could respond in either English or French and were asked to return their responses either electronically or by mail within 12 days. After 12 days I sent an email reminder shown in Appendix D.3 to all the potential respondents thanking those who had responded, and encouraging those who hadn't responded to do so. Some respondents chose to mail their responses instead of using email, so this phase of the data collection period was extended to one month.

Given my relationship to the people receiving the questionnaire, specific steps were taken to encourage respondents to respond openly and honestly without any concern about potential conflict and to eliminate any perception of power or manipulation. To achieve this, the questionnaire was sent in an electronic format and all responses were returned by email or by post to an independent party (a fellow doctoral student) who removed all personal information that might identify a respondent. A confidential list of respondents was kept for future referencing if necessary but only identified to me by group and number (e.g. teacher 1 became T1, administrator 1 became A1 and parent 1 became P1). The resulting sets of anonymous responses were tabulated by a second doctoral colleague before the typed results were sent to me for analysis. These steps were taken to protect respondents' anonymity, to encourage their participation, and to promote the validity of their responses.

5.2.2.2 Students' Literacy Scores

Also contained in my data set are the school's students' *Developmental Reading Assessment* (DRA)⁷ (Beaver, 2006) results collected over a reporting period of five years and used with the permission of my school board. The DRA measured both students' reading and comprehension levels and as the DRA is standardized, there are grade text levels benchmarked for grades 1 to 8. As part of our school board's literacy plan, all elementary schools were instructed to use the DRA each fall and spring for our cycle 1, year 2 students (grade 2) and to forward these scores to our school board. Our board had chosen to track grade 2 students because the board was interested in the early identification of at-risk literacy students. Schools' results were compared to the board's average and these comparative data were given to each school twice a year. Our school used these data as part of our school improvement statistics in our school success plan. Although our French Immersion students' reading was also assessed using the GB+ as discussed in Chapter Four, these results were not part of the school board's data collection; because of the diversity of French Immersion delivery across the board no common benchmarks could be set. Therefore I did not use the French Immersion scores for my data collection or analysis.

5.3 Data Analysis

The data analysis rigorously examines both the qualitative and quantitative data that I collected in this study and adheres to action research methodology. In this section I will draw evidence from both qualitative and quantitative data.

⁷ See Table 16.

5.3.1 Qualitative Data Analysis

Chapter Four has provided a detailed account and analysis of the data collected over the duration of this study derived from my journals, correspondence and course work. In this analytical review of my field notes, course work and emails some salient points become apparent: 1) I grew professionally as a principal gaining new literacy knowledge throughout my study; 2) my practice evolved as my leadership became more collaborative by promoting shared leadership with literacy resource teachers; and 3) I introduced several literacy initiatives that evolved into themes over the study period. These points were discovered after many re-reads of all of my qualitative data while I searched for re-occurring themes that I highlighted as I went along. I paid particular attention to my graduate course work that had refined my focus at different points in time during my study. I also very carefully reviewed plans that I had drafted to examine their focus and to look for evidence of change in my practice over the course of the study. By reviewing this material until I was able to make sense of it, through reflecting on what I had recorded, and concentrating on why I thought what I had written at the time was important; I was finally able to identify three key features about my practice from my analytical review. Once these areas were identified, I went over the material again to confirm my findings. This work required time to sort the material, to organize it in a chronological format, to analyze it, to identify my findings, and to re-confirm my claims.

From this review, I made one additional and important observation and that was in the years in which I had taken graduate courses and documented my work as part of my coursework, I found that I had made the greatest gains in my practice. I believe that this finding results from the fact that my graduate studies directed me to take additional time to document and to reflect. My course work yielded rich and thick descriptions of the events

unfolding in my study and during these periods I created more detailed action plans.

Additional reflection led me to take more informed action and this led me to grow my practice more effectively.

5.3.1.1 My professional growth

I began this study as a novice elementary principal with little knowledge about effective literacy practices and now at the end of my study by steadily improving my practice and developing my literacy awareness, my practice has evolved into one matching Booth & Rowsell's (2002, p.15) description of a literacy principal. Borrowing from Booth & Rowsell's work, I define a literacy principal as a principal who has jointly developed with staff a successful literacy program by focussing on setting a literacy agenda that supports teachers, accesses resources and builds capacity for on-going literacy growth in effective teaching practices.

My professional growth is evident in the many vignettes provided in the earlier chapters and my success in becoming a literacy principal is substantiated by the following statements from respondents in my questionnaire⁸:

A-4: She has extensive knowledge on literacy and constantly seeks out new materials, workshops and research....

T-8: Marian's knowledge of Balanced Literacy and literacy best practices enabled her to question, guide and converse with her teachers in a manner that promoted the development of understanding and implementation of the above....

P-2: She spends a considerable amount of time researching best practices, exploring new opportunities, and working with the teaching staff and parents to enhance the learning experience for all students.

⁸The full transcript of the respondents' anecdotal comments can be found in Appendix E.2.

Although I have selected just a few representative statements to support this claim, further evidence can be found in additional respondents' statements in Appendix E.2. A few respondents, mostly teachers, express that they may not have always liked how I initiated literacy practices and state that they felt at times overwhelmed by all of the literacy activities undertaken making comments such as,

sometimes... we feel pulled in too many directions as a result and end up doing many things in mediocre ways as opposed to doing a few things really, really well (*T12's response #5*).

But almost all cite positive views about the literacy growth of staff and students that occurred in the school. This feedback confirms for me that I successfully developed into an elementary literacy principal who was knowledgeable about literacy-teaching practices that enabled me to engage in useful literacy exchanges with staff. These exchanges helped to refine our work and increase our effectiveness in delivering a more successful literacy program.

5.3.1.2 Promoting Shared Leadership

My practice was forever shifting throughout my study because of my on-going reflection. As I review the evolution of my practice, I note that how I viewed my role and my work with teachers changed significantly over time. I found signs of this transition in three places: by examining the evolution of my main research question; by reviewing how I directed my study; and from analyzing the evolution of a learning community within the school.

My earliest research questions focussed on what I could do to influence teachers' literacy practices but as my study progressed, I began to shift the focus to my practice – what I could do to enhance literacy. My metamorphosis from practicing an autocratic leadership

style that is very evident at the onset of this study to developing one that is more democratic and inclusive is succinctly shown in the progression of my lead research question:

- How do I as a school principal influence the culture of learning in the school in a way that helps to enhance the education of students and the professional development of staff? (year 2001)
- How do I as a principal influence the teaching of literacy skills in my school in a way that helps to improve the literacy levels of our students and develops teachers professionally to be more proficient in their teaching of literacy skills? (year 2002)
- How can I improve my practice as an elementary school principal by focusing on improving the teaching of literacy and create my own living educational theory? (year 2004)
- How do I as a principal improve my practice to enhance the teaching of literacy? (year 2007)

As I view the 2001 lead question, it is clear to me that not only does it not focus on literacy; it also is a very principal-directed statement that implies that the principal will change the school's culture to improve learning and teaching. In 2002, there remains a very strongly worded principal-directed statement that is now however, literacy-based. But in 2004, the statement has shifted from my directing change outwards (external change) to my focusing on inward change (internal change) with the focus now being on improving my practice while keeping literacy instruction at the forefront. In keeping with action research practices, my action research cycles reviewed my current practice, identified an aspect that I wished to improve and then sought solutions that were tried in practice and re-evaluated (McNiff, et al., 2001).

As my study unfolded and my literacy knowledge base expanded, I no longer viewed my work as being that of a conductor directing the actions of others but I came to comprehend that change must first come from within my own practice. I could not guide effective

literacy-teaching practices if I did not fully understand them and, to become more effective in my work, I had to immerse myself in effective literacy-teaching practices. I could not expect teachers to change their practices if I were unwilling to change mine. Moreover, I alone could not improve students' literacy success and this growing awareness is reflected in the evolution of my lead research question. The changes made to my key question show that I acknowledged that improvement to literacy practices had to be shared between me and the teachers within our school's learning community, and this inevitably affected the evolution of my study.

This shift is also clearly evidenced by the contrast in the two reflections from 2002 and 2004 respectively as my research focus was being refined by reflective practice. During 2002, in preparing for an action research presentation (Lothian, 2002) a number of reflective questions were raised:

- How do I get teachers to recognize the need to change teaching practices to enhance students' literacy learning?
- How do I nurture collaborative planning while maintaining the momentum of change so inertia doesn't set in or the tendency to retreat to old practices?
- How do I manage perceived necessary changes that must be principal guided or otherwise they won't occur? (*Lothian, 2002*)

By the 2004 school year, I reflected on what I had learned as I worked on addressing the questions raised in 2002:

The more modeling and teacher mentoring that can occur – the more changes to teaching practices take place

Sustainable changes to teaching practices are more likely to occur when pedagogical professional development is done in larger groupings over time i.e. by cycle or by school – creating on-going professional dialogue, support and momentum for groups of teachers

A caring and safe learning climate for teachers must exist within the school – they have to be able to say I need help or I don't know how to do this and still feel professionally secure

The principal must timetable weekly teacher cycle meeting times – these must be largely teacher directed

The principal must be approachable and easily accessible as much as possible on a daily basis to hear directly from teachers their concerns and needs

Sustainable change is a we and not an I thing, I have to grow with the teachers
(Journal excerpt June 2004)

These excerpts demonstrate that my thinking evolved as I carefully examined the steps that I would need to take to grow my practice to effectively guide literacy initiatives. Over the course of my study as I strove to improve my practice and reflected on my leadership style, I began to take on a more shared leadership approach. My field notes succinctly describe how my leadership underwent change, became more inclusive, and this growth is substantiated by the comments made by administrators and teachers in my survey:

A1: The teachers involved in the lead school initiatives have taken on responsibility and leadership roles within the school, and their expertise is benefiting both students and staff. What was, by all accounts, a mediocre elementary school before Marian, has become one to be emulated.

A2: She has brought in experts to mentor the new teachers; she has encouraged cycle meetings so the teachers can work as a group to share the methods for teaching literacy.

A10: Beginning with the end in mind, the school readjusted its focus to properly assess and evaluate the students. As a result their teaching practices changed and improved. With team meetings, focused P.D. and an encouragement to share what they learned, the students benefited immeasurably.

T2: While Marian does not always come to us with the ideas on how to effectively structure a reading block, she does always support ideas/input from staff members when they are offered.

T4: Actively listens to teachers recommendations regarding materials, approaches.... Teachers are setting smart goals for themselves and students

T9: Time set aside for planning and reviewing new practices.... these initiatives allowed us to support each other in our learning.... As the practices became common amongst the teachers, we were able to plan together and support each other as well.

As for my practice, I would hope that I would have had more practice in sharing leadership and would have grown even more in this area had there existed a more harmonious period in the last third of my study as we developed as a professional learning community.

The evolution of change in my leadership is further evidenced in one of my graduate research papers (2003) entitled: *An Action Research Study of a Principal's Role in Shaping a School's Learning Culture*. My focus remained on improving literacy but I sought a more collaborative approach by engaging in the creation of a professional learning community as a means to grow effective literacy-teaching practices. This initiative is indicated in this abstract written for the paper:

The study examines the setting of literacy targets for all students....done at weekly teacher cycle team meetings and mentoring meetings that take place after school. The teaching staff ...is working towards creating a professional learning community to assist them in making changes to their teaching practices to enhance student learning. It is the on-going professional dialogues about how to improve the students' literacy scores that forms the basis for this study and provides a context for the principal to explore her role in shaping teaching practices. (*Excerpt from graduate course work, November 2003*)

Our school's professional learning community had a few starts and abrupt stops as it was riddled with labour unrest, which lasted for a two and a half year period during this study. This played havoc with the birthing of our school's professional learning community and it was hard to share school leadership with the teachers' association although initially we had

made great gains. The staff was genuinely interested in exploring and developing the concept of forming a professional learning community as described in my earlier field notes shared in Chapter Four. In Chapter Six I expand on this point when I share my study's final reflection and my closing thoughts.

5.3.1.3 Literacy Initiatives

My third finding focuses on the literacy initiatives that underwent several stages of development resulting from the “think-act-reflect” cycles over the course of my research. In my early years as principal, the literacy initiatives began as notions which developed into broad areas by the mid-point of my study. As my literacy knowledge became more informed, the broad areas evolved into ten literacy themes in the final phase of my study. With input from critical friends in the final analysis of my questionnaire findings, the ten themes were reduced to nine literacy interventions for the purposes of analysis to measure my effectiveness in enhancing literacy-teaching. This evolution of my study's literacy initiatives is shared in the following excerpts taken from my field notes.

5.3.1.3.1 Emerging Notions about Literacy

Possible solutions – (Year 2001 – 2002):

- The hiring of new staff with a base or interest in literacy
- The creation of opportunities for resident literacy master teachers to work with teachers on staff and do P.D.
- The use of a team approach to buy new learning materials
- Bringing in publishers to demonstrate new materials
- Encouragement of staff to attend P.D. workshops both in and out of the school to develop new ideas and more effective teaching strategies
- Involvement of some teachers to sit on board and provincial curriculum planning committees

- Supplying teachers regularly with current professional articles to read
- Creation of a teacher resource library of professional books
- The encouragement of staff to visit schools/classrooms where effective teaching is taking place (*Excerpt from presentation to International Conference of Teacher Research – Montréal, Québec, April 2002*)

5.3.1.3.2 Broad Areas of Literacy Focus

As my study underwent a second reflective cycle (discussed in Chapter Four), I re-examined the areas of interest that had originated in my first reflective cycle (discussed in Chapter One). With my continued efforts to refine my practice and to improve the teaching of literacy, these notions had now grown into broad areas of literacy focus:

Variables to be considered in developing literacy initiatives (Year 2003 – 2004):

- Availability of literacy-teaching materials (resources)
- Financial resources to acquire needed literacy-teaching materials (resources)
- Teachers' knowledge about effective literacy-teaching practices (learning culture)
- Teachers' awareness of the need to change literacy-teaching practices (learning culture)
- Teachers' willingness to participate in professional development in effective literacy-teaching techniques (learning culture)
- Financial resources to provide literacy professional development (resources)
- My knowledge of effective literacy-teaching practices (leadership)
- My ability to create a learning culture in the school to promote effective literacy-teaching practices (leadership)
- My ability to promote an enhanced team approach to improve students' literacy score (leadership)
- Level of parental involvement in student literacy attainment (learning culture)

- Large ESL student population (30%) (student profile) that impact on school's scores
- Large special education student population (25%) (student profile) that impact on school's scores
- Inner city school elements (poverty, abuse, student transience, high absenteeism) - (student profile) that impact on school's score
- Dual track programs – Regular English Program & French Immersion Program (50/50 Immersion) – (program delivery)
- Tracking of students' literacy results and setting of realistic literacy goals for our school (shared leadership)
- School Success (provincial mandate)
- School Success Accountability (provincial mandate)
- QEP (Québec Education Program) – (provincial mandate) (*Excerpt taken from reflection July, 2004*)

5.3.1.3.3 Ten Literacy Themes

These broad areas later developed into literacy themes by using a spiral approach in my study – building on my newly gained knowledge in the field while continuing to enhance my learning about literacy and improving my practice by building on my newly gained knowledge. These themes were shaped by the “think-act-reflect” cycles that directed my practice. This work has been documented in Chapter Four through the use of vignettes to explain the evolution of the broad areas of my study into specific literacy themes. These themes were consolidated from carefully and repeatedly filtering through my notes and looking for evidence to match to the conditions cited by Booth and Rowsell (2002) as “...necessary for providing support to teachers...” (p. 79). From the actions that comprised my efforts to improve literacy-teaching, these ten literacy themes emerged:

1. building a literacy-based school culture;
2. ensuring a literacy curriculum framework with instructional methods and models;

3. acquiring appropriate literacy-teaching and learning materials and resources;
4. promoting professional development that centers on literacy instruction;
5. providing literacy-based coaching and mentoring;
6. establishing a literacy-teaching block for instruction;
7. creating a time for literacy teachers to meet and jointly plan instruction;
8. implementing appropriate supports for at-risk literacy students;
9. introducing the use of a range of literacy assessment tools and appropriate assessment practices;
10. engaging in literacy research

5.3.1.3.4 Identification of Nine Literacy Interventions

The reflective cycles in my thinking on literacy interventions influenced how I viewed my measurement tool – the questionnaire. Each reflective cycle sharpened my focus. When I first began to analyze the responses from the 31 questions on the questionnaire; I had started with the ten literacy themes and then added an eleventh. One of the strategies I had tried was to remove distracters from teachers to try to free up teacher time and to give staff direct support. Examples of this are: responding to their more difficult emails from parents, minimizing announcements during literacy-teaching blocks, etc... But as no questions lined up with ‘removes distracters’ it was eliminated, leaving the original ten themes to be matched to the 31 questions. When my group of critical friends independently reviewed the 31 questions (Part A) of the questionnaire and matched them with the ten literacy themes, they recommended that two themes (numbers 1 and 10) be collapsed into one – building a

literacy-based school culture and engaging in literacy research. The 31 questions were then matched to the resulting nine themes.

For the analysis of my questionnaire, borrowing from Lecompte et al (1999), I will use the term literacy interventions to keep these distinct from the themes that emerged earlier in my study. I define a literacy intervention not as a single action but as a categorization of actions centered on a broader concept which educators have come to commonly define in widely accepted professional terms. For example, hosting family literacy evenings, creating a school library, establishing cross-cycle reading buddies, having book fairs, etc... are actions that collectively build a literacy-based school culture. Building a literacy-based school culture is a literacy intervention that is professionally commonly accepted. It is understood that it is derived from a number of identified and accepted literacy practices.

5.3.1.3.5 Early Evidence of Nine Literacy Interventions

My literacy interventions have been identified from analyzing my research field notes and from reflections, and are rooted in my earliest reflections dating back to December 2000 (report to the school board on our school's needs), October 2001 (in our literacy plan), June 2002 (staff meeting), and August 2003 (staff meeting). Excerpts from this data trace the early stages of the emerging interventions:

- “We need reading materials for each cycle – Cycle 1 -\$2,500 for reading box libraries to provide the main reading materials and the same for Cycles 2 and 3- total cost \$7,500”
Intervention #2 acquiring appropriate teaching materials (year 2000-2001)
- “Our school...will take a small team...to study a balanced approach to reading. We will be visiting 3 schools in Edmonton...” Interventions # 4 ensuring a literacy curriculum and intervention #1 promoting professional development (year 2001-2002)

- “P.D. will be provided to teachers who are unfamiliar with...how to do running records-our three trained *Reading Recovery* (Bourque, et al., 2006) teachers can assist in this training as required...” Intervention # 7 opportunities for literacy coaching and mentoring (year 2001-2002)
- “...in-house P.D. for teachers on how to use assessment tools to screen and detect reading and writing weaknesses in students as part of our Literacy project...”
Intervention # 5 developing literacy assessment tools (year 2001-2002)
- “Another of our cycle 3 teachers is working on a PDIG (grant) proposal if accepted to work with other teachers in our Board to establish English writing exemplars.”
Intervention # 9 fostering a literacy-based school culture (year 2001-2002)
- “Our resource teacher is working at the Board level in developing areas of special education support.” Intervention # 6 supports for at-risk literacy students (year 2001-2002)
- “Teachers’ schedules in August 2002 will change to a six day teaching cycle that will also contain 90 minute literacy-teaching blocks.” Intervention # 8 establishing a teaching block for literacy (year 2002-2003)
- “Teachers’ schedules in August 2003 will include scheduled common cycle meeting times as part of their workload.” Intervention # 3 establishing time for teachers to work together (year 2003-2004)

As illustrated, even in the early stages of my research there is strong evidence linking my action plans to initiatives that would develop into the nine interventions, although I have only been able to identify and trace the origins as a result of my involvement in action research.

These interventions were then used to analyze the responses from the three groups of respondents (administrators, teachers and parents) to the questionnaire.

Interestingly, my literacy interventions very closely resemble the nine areas of content knowledge that were determined by “The Children’s Literacy Initiatives” essential to successful literacy principals and cited in Booth’s and Rowsell (2007). Their critical areas of literacy content knowledge are: 1) School Culture, 2) What the Experts Say, 3) Children’s Literature, 4) Current Instructional Models, 5) Curriculum, 6), Learning Time and Space, 7) Assessment Practices, 8) Support for Struggling Readers and 9) Research (Booth & Rowsell, 2007, p. 30-32). There are however, distinct differences in the critical areas of literacy content knowledge; namely, professional development, mentoring and coaching; and joint planning is not identified but I believe, as a result of my study, these are critical areas. As for omissions in my nine interventions, I argue that what experts have to say is embedded under research and that this is an integral component of the school’s learning culture. I have also joined curriculum and instructional models in what I refer to as intervention #4. I believe that although there are great similarities to “The Children’s Literacy Initiatives”, my nine interventions are more comprehensive and better accommodate the needs of literacy principals.

These nine intervention strategies became a fundamental dimension in my analysis of the questionnaires. The other dimension was group type: teacher, parent, and administrator. The correspondence between the nine interventions and the 31 questions of the questionnaire⁹ are given in Table 1.

⁹ For more details see Appendix F.

Table 1:
The Correspondence between the Nine Interventions and the 31 Questions of the Questionnaire

Nine Literacy Interventions	Questions
1. Promoting professional development that centers on literacy instruction	2, 23, 27
2. Acquiring appropriate literacy-teaching and learning materials, space and resources	8, 9
3. Creating a time for literacy teachers to meet and jointly plan instruction	4
4. Ensuring a literacy curriculum content framework with instructional methods and models	14, 15, 16, 18, 28
5. Implementing the use of a range of literacy assessment tools and appropriate assessment practices	7, 10, 30
6. Providing appropriate supports for at-risk literacy students	19, 20
7. Supplying opportunities for literacy-based mentoring and coaching	5, 22, 26
8. Scheduling a literacy-teaching block for literacy instruction	6, 11, 12, 13, 17
9. Fostering a literacy-based school culture and promoting literacy research	1, 3, 21, 24, 25, 29, 31

5.3.2 Quantitative Analysis

The continuous refinement of my applied literacy actions derived from on-going reflective practice led me to view literacy interventions in a very structured fashion. This knowledge resulted in the creation of nine specific literacy interventions and from my qualitative analysis of the evolution of these literacy interventions, I began to realize that I had created a means by which literacy interventions could be ranked. Thus I began to question not only my effectiveness but also the degree of my effectiveness in each of the literacy interventions.

This line of thought began to raise important questions in the final stages of my analysis that I struggled to answer: Which of the nine interventions was I most effective in applying as part of my practice as a literacy principal? How could I rank my interventions? To answer these questions, I realized that I needed to assign ordered number values to the questionnaire responses and I needed to introduce statistical tests to evaluate the results. Thus my qualitative study was leading me to consider using a quantitative analysis.

On reading more deeply, I discovered that using quantitative data analysis techniques may be very helpful in a qualitative study (LeCompte & Schensul, 1999) and that certain research questions can only be answered by using both analytical approaches. Brighton (2009) further adds that at times to analyze data and to draw conclusions it is necessary to “Use whatever analytic methods are appropriate to the research question(s) – both qualitative and quantitative – to interpret data. This step may require additional collaboration with....others....who have expertise” (p.43). This blending of analytical applications is also supported by Jick (1983) for rigorous triangulation:

Triangulation....can also capture a more complete, holistic, and contextual portrayal of the unit(s) under study. That is, beyond the analysis of overlapping variance, the use of multiple measures may also uncover some unique variance which otherwise may have been neglected by single methods.Perhaps the most prevalent attempts to use triangulation have been reflected in efforts to integrate fieldwork and survey methods (Jick, 1983,p.138).

This final point made by Jick (1983) accurately captured what I was trying to do with my data.

My quest to find appropriate analytical tools for my action research study spanned several months, many in-depth conversations with a federal government statistician and additional reading to determine my best course of action. My sample of responses from my questionnaire and of my DRA scores was small; therefore I had to exercise caution that the methods I chose to apply would be valid and reliable. By now I had fully entered into the field of quantitative data analysis which had never been a part of my original plans but my research question and its resulting sub-questions had brought me to this interesting dilemma.

To rank the interventions meant that I would need to establish “... a process of entering data, naming and defining variables, making sure that the entry process is quality controlled, and cleaning the data to prepare for data analysis” (LeCompte & Schensul, 1999, p.119). Upon the advice of a critical friend who is a statistician and because it has been used in qualitative studies (LeCompte & Schensul, 1999), I chose the statistical package Statistical Analysis Survey¹⁰ (SAS). I gave the statistician the reformatted, anonymous, data as well as the DRA scores and we thoroughly discussed the questions I wanted to answer and why these answers were important to my study. He then entered the data and ran the analysis.

5.3.2.1 Analysis of the Questionnaire Results – Part “A”

To measure my effectiveness as a literacy principle in implementing the nine interventions, in total, 68 questionnaires were sent to the three groups of observers. The response rate was 43%, with the group response rates given in Table 2.

¹⁰ SAS Institute Inc., Cary, NC

Table 2:
Questionnaire Response by Group

	Teachers	Parents	Administrators	Total
Questionnaires sent	39	8	18	65
Response received (%)	13 (33)	3 (38)	12 (67)	28 (43)

5.3.2.1.1 Measuring Effectiveness

In Part “A”, the respondents were asked 31 Likert type questions with the five possible choices given in Table 3. Note that the five choices are not strictly a Likert or ordinal scale because of choice 5 (don’t know). If I interpret choice 5 as a missing response (a non-response) then Table 3 represents a Likert scale with four response categories.

Table 3:
Possible choices to the questions in Part “A”

Choices	Interpretation
1 Most of the time	Positive – effective
2 Sometimes	Neutral
3 Rarely	Negative – not effective
4 Never	Extremely negative – not effective
5 Don't know	None

I have interpreted “most of the time” as a positive response indicating that I, as a school principal, have been effective in implementing the initiative. The choice “sometimes” is an ambivalent phrase and therefore it was viewed as a neutral response. “Rarely” and “Never” were viewed as negative evaluations of my effectiveness in implementing the intervention. In setting up the Likert choices in this particular order, the choices remain ordinal but are weighted towards negative responses. Additionally, the choices “sometimes” and “rarely” were placed in the middle of the range of score choices. This interpretation of the scale

consistently biases the results towards the negative to help reduce any potential bias associated with giving an extreme negative evaluation of someone the respondents knew personally, and to ensure that any evidence of “effectiveness” is incontrovertible.

Most of the returned survey questionnaires contained partial non-responses answered with “don’t know” or left blank. In total, 137 (16%) of the questions went unanswered, summarized in Table 4 provides an over-all response rate of 36.3%.

Table 4:
Questionnaire Partial Non-response Rate by Group

	Teachers	Parents	Administrators	Total
Total Questions	403	93	372	868
Unanswered (%)	10 (2)	20 (22)	107 (29)	137 (16)

Figure 3 summarizes the valid responses for all of the responses that were received and also show that no observers chose a response of “never”.

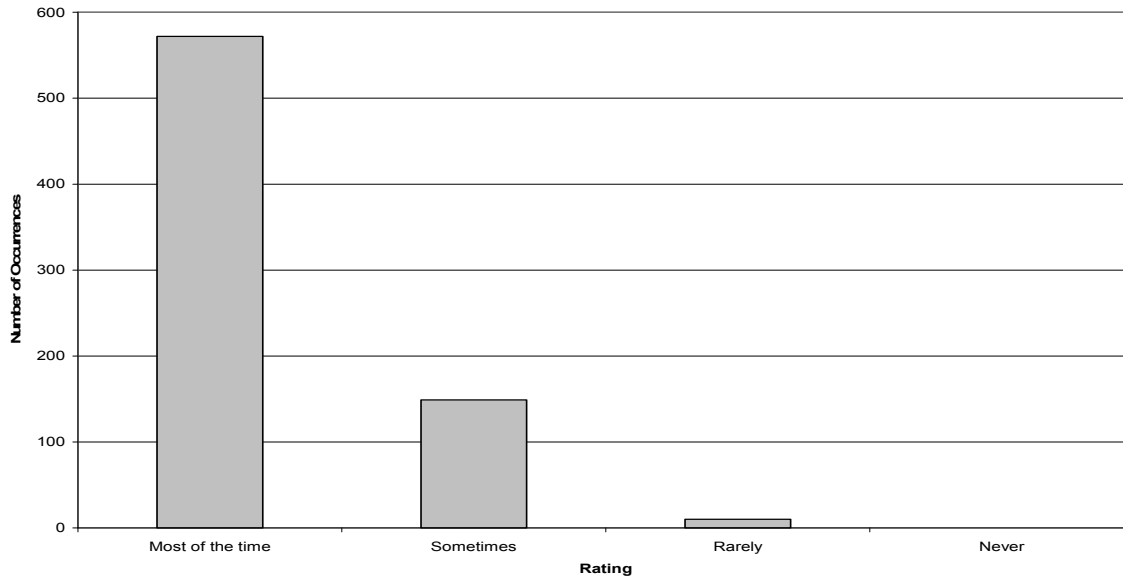


Figure 3:
Distribution of Responses for all Groups and all Interventions

Given these results, the choices “rarely” and “most of the time” are antonyms and thus can be thought of as being equally distant from neutrality or zero which is represented as “sometimes”. This simple interpretation of these ordinal categories (i.e. positive, neutral, negative) leads to a natural rescaling to become interval data (+1, 0, -1) and allows for more precise statistical testing. Table 5 summarizes the interval transformation of the Likert scores.

Table 5:
Transformation of Choices to the Questions in Section A

	Choices	Interpretation	Interval score
1	Most of the time	Effective implementation	+1
2	Sometimes	Neutral evaluation	0
3	Rarely	Ineffective implementation	-1
4	Never	Unobserved - dropped from analysis	
5	Don't know	Missing value – dropped from analysis	
6	“blank”	Missing value – dropped from analysis	

Once the values were determined and the questions matched to one of the nine interventions, it was decided to run two sub-tests with SAS given the small sampling, the need to rank the interventions, and the unusual clustering of responses. The Wilcoxon Sign Rank Test (Tomkins, 2006) tests to see if the median score of the observations is definitively on the positive or negative side of a “neutral evaluation”. If there is a high probability that the median is in the positive area then the claim can be made with a high degree of certainty that the majority of the respondent group in question believed that I was effective in implementing that intervention. Results of the Wilcoxon Test are given in Table 6.

Table 6:
The Wilcoxon Sign Rank Statistic and the Associated Probability (P) for all Interventions and Respondent Groups

Literacy Intervention		Administrators	Teachers	Parents	All Groups
Fostering a literacy based school culture and promoting literacy research	Score	0.91	0.77	0.89	0.84
	Observations	34	39	9	82
	Median	1	1	1	1
	Wilcoxon Test (P)	248 (0.0%)	248 (0.0%)	18 (0.8%)	1242 (0.0%)
Promoting professional development that centers on literacy instruction	Score	0.78	0.65	0.83	0.72
	Observations	18	26	6	50
	Median	1	1	1	1
	Wilcoxon Test (P)	53 (0.0%)	85 (0.0%)	8 (6.3%)	351 (0.0%)
Implementing the use of a range of literacy assessment tools and appropriate assessment	Score	0.78	0.62	1.00	0.71
	Observations	9	13	2	24
	Median	1	1	1	1
	Wilcoxon Test (P)	14 (1.6%)	22 (2.2%)	2 (50.0%)	85 (0.0%)
Providing appropriate supports for "at risk" literacy students	Score	0.79	0.61	0.67	0.67
	Observations	33	59	9	101
	Median	1	1	1	1
	Wilcoxon Test (P)	176 (0.0%)	369 (0.0%)	11 (3.1%)	1241 (0.0%)
Creating a time for literacy teachers to meet and jointly plan instruction	Score	0.97	0.82	0.88	0.88
	Observations	30	39	8	77
	Median	1	1	1	1
	Wilcoxon Test (P)	218 (0.0%)	264 (0.0%)	14 (1.6%)	1173 (0.0%)
Scheduling an uninterrupted literacy teaching block for literacy instruction	Score	0.82	0.81	0.60	0.79
	Observations	17	26	5	48
	Median	1	1	1	1
	Wilcoxon Test (P)	53 (0.0%)	116 (0.0%)	3 (25.0%)	371 (0.0%)
Acquiring appropriate literacy teaching and learning materials, space and resources	Score	0.68	0.51	0.29	0.56
	Observations	25	39	7	71
	Median	1	1	1	1
	Wilcoxon Test (P)	86 (0.0%)	115 (0.0%)	4 (68.8%)	407 (0.0%)
Ensuring a literacy curriculum content framework with instructional methods and models	Score	0.91	0.66	0.33	0.71
	Observations	32	62	9	103
	Median	1	1	1	1
	Wilcoxon Test (P)	176 (0.0%)	431 (0.0%)	6 (45.3%)	1424 (0.0%)
Supplying opportunities for literacy based mentoring and coaching	Score	0.91	0.86	0.83	0.87
	Observations	67	90	18	175
	Median	1	1	1	1
	Wilcoxon Test (P)	946 (0.0%)	1502 (0.0%)	60 (0.0%)	5890 (0.0%)
All Interventions	Score	0.86	0.72	0.70	0.77
	Observations	265	393	73	731
	Median	1	1	1	1
	Wilcoxon Test (P)	13168 (0.0%)	20798 (0.0%)	765 (0.0%)	81912 (0.0%)

Despite the fact that the threshold for acceptance was set high (99% level), the results overwhelmingly support the hypothesis that all the groups evaluated my application of the literacy interventions as “effective”. In every group’s evaluation of each intervention, the majority of respondents rated me as “effective”. This is verified by the fact that in every cell of Table 6 the median is “one”. In addition, in 31 of the 40 cells, there is a greater than 99% probability that the hypothesis is true. In these cells the declaration that I was effective in implementing the intervention will be correct 99 times out of 100. Of the nine cells that “fail”

the test, four “pass” at the 95% level and one passes at the 90% level. The remaining four “failures” are all in the parent category where the number of observation is too small to make definitive statistical declarations. The results shown in the bottom line (all interventions) in Table 6, unequivocally state that as principal I was judged by all three groups as effective in implementing the nine literacy interventions.

While the results in Table 6 consistently rate me as being effective, they also show considerable variability, ranging between 0.29 and 1.00 (the maximum). These differences led to the question of whether the observed variations between groups and between interventions are due to chance or are due to genuine differences between the categories. To test the hypothesis that different groups evaluated me differently, a second sub test was used – the Kruskal-Wallis Test. This is a non-parametric test that is appropriate for ordinal data and it is the multi-group extension of the Wilcoxon Test. Table 7 shows the results of this test when it is applied to the responses of the three groups.

**Table 7:
The Kruskal-Wallis Test for Differences between the Observer Groups**

	Teachers	Parents	Administrators	Chi-Square	Probability
Average Score	0.718	0.699	0.864		
Kruskal-Wallis Statistic				17.0	0.02%

Table 7 is unequivocal; it shows that there is significant statistical difference in the groups’ average scores. There is a 1 in 5000 chance that the observed differences in the average group scores are due to random chance. Thus while the three groups rate me as effective; administrators rated my effectiveness significantly higher than teachers who in turn

rated my effectiveness higher than parents did. The Kruskal-Wallis Test was also applied to the intervention categories and the results are shown in Table 8.

Table 8:
The Kruskal-Wallis Test for Differences between Interventions

Literacy Interventions	Responses	Score
Fostering a literacy-based school culture and promoting literacy research	82	0.841
Promoting professional development that centers on literacy instruction	50	0.72
Implementing the use of a range of literacy assessment tools and appropriate assessment practices	24	0.708
Providing appropriate supports for at-risk literacy students	101	0.673
Creating a time for literacy teachers to meet and jointly plan instruction	77	0.883
Scheduling an uninterrupted literacy-teaching block for literacy instruction	48	0.792
Acquiring appropriate literacy-teaching and learning materials, space and resources	71	0.563
Ensuring a literacy curriculum content framework with instructional methods and models	103	0.709
Supplying opportunities for literacy-based mentoring and coaching	175	0.874
Kruskal-Wallis Chi-square Statistic	37	
Kruskal-Wallis Probability	<0.0001	

Table 8 indicates that while I was effective at implementing all nine interventions, I was effective at implementing some more than others. The Kruskal-Wallis Test affirms that statistically meaningful differences exist and my effectiveness varied across the interventions.

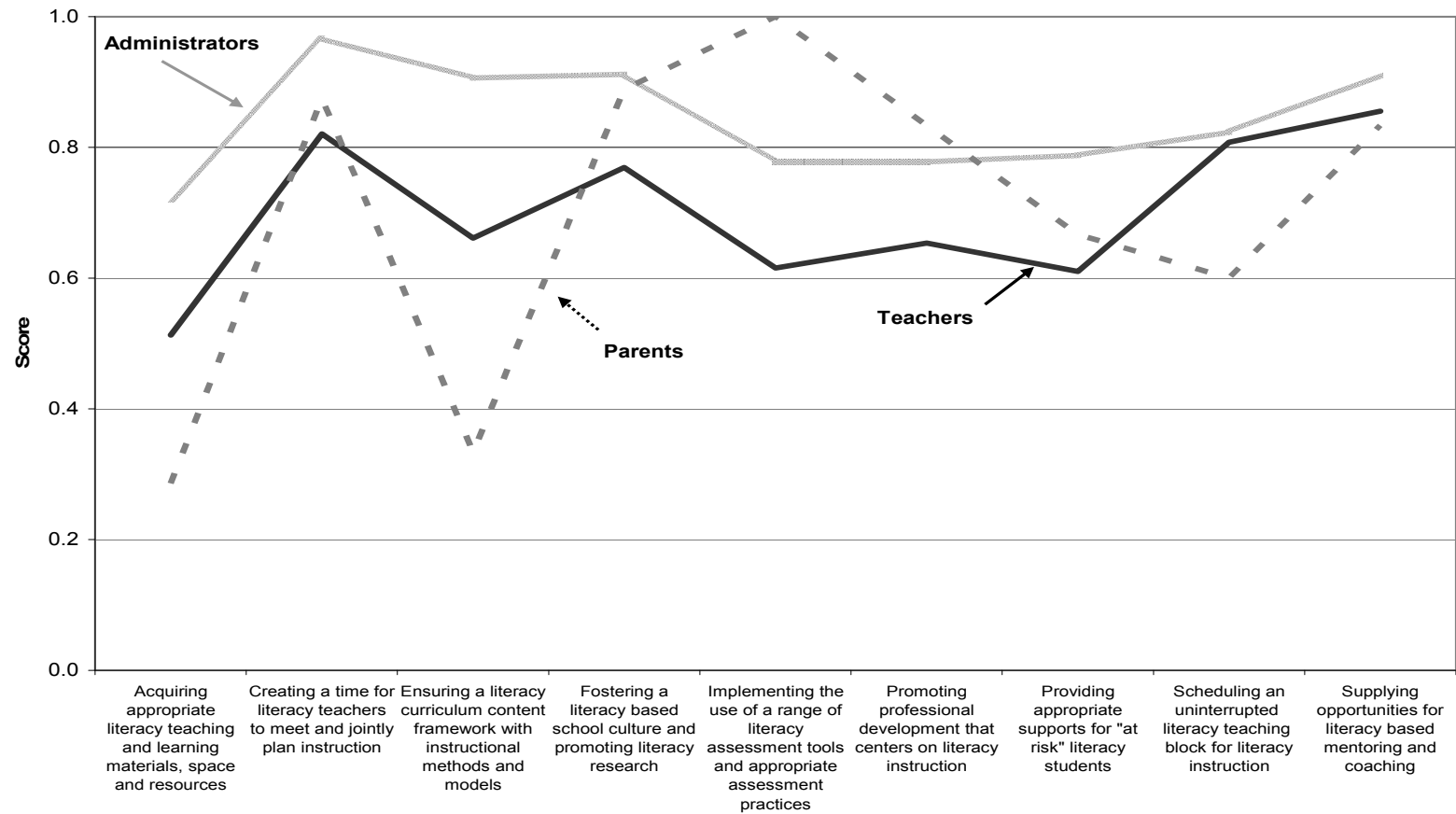


Figure 4:
Scores by Groups and Intervention

Figure 4 presents a summary of the average scores by group and intervention. The chart shows that teachers and administrators had similar patterns in their scoring except the administrators consistently scored me 0.15 points above the teachers in all interventions. Parent responses were not consistent with either the teachers or the administrator responses. Figure 4 also shows that there are two distinct effects (group and intervention) in the data and they are intermingled. The shifting balance of group participants across the interventions is biasing the average scores for each intervention and the shifting balance of intervention responses between the groups is also affecting the average group scores. To estimate the true unmingled effects, another assumption had to be made that the data derive from an interval measurement scale.

The General Linear Model procedure in SAS 9.1 was applied, since it is an appropriate mechanism for separating the two effects. Table 9 summarizes the results for the three groups and Table 10 summarizes the results for the nine interventions. Note that the “true” score is always below the observed average. The imbalanced number of responses matched with the nine interventions causes this effect. The responses to the intervention “supplying opportunities for literacy-based mentoring and coaching” were more numerous than for any other intervention and because all three groups perceived this intervention very positively, this intervention biased the estimates upwards.

Table 9:
Summary of the Average Scores by Groups

	Teachers	Parents	Administrators
Average score of all responses	0.718	0.699	0.864
Least square means from SAS GLM	0.705	0.677	0.841

Table 10:
Summary of the Average Scores by Interventions

Literacy Intervention	Average score	Least square means
Creating a time for literacy teachers to meet and jointly plan instruction	0.883	0.869
Supplying opportunities for literacy-based mentoring and coaching	0.874	0.861
Fostering a literacy-based school culture and promoting literacy research	0.841	0.824
Scheduling an uninterrupted literacy-teaching block for literacy instruction	0.792	0.782
Promoting professional development that centers on literacy instruction	0.720	0.710
Ensuring a literacy curriculum content framework with instructional methods and models	0.709	0.705
Implementing the use of a range of literacy assessment tools and appropriate assessment practices	0.708	0.696
Providing appropriate supports for at-risk literacy students	0.673	0.667
Acquiring appropriate literacy-teaching and learning materials, space and resources	0.563	0.554

The ranks, values and the differences between the least-square means in Table 9 and Table 10 are statistically meaningful. Thus looking at Table 10, one can see grouping of the relative effectiveness of the nine interventions. Because it should be noted that an average score as low as 0.55 indicates that I was effective in implementing the intervention, but I was significantly less effective than the top interventions, but Table 10 suggests that if I wish to improve my effectiveness, I need to concentrate on improving the last two interventions.

5.3.2.2 Analysis of the Questionnaire Anecdotal Questions Parts A and B

In total, 22 of the 28 respondents replied to the anecdotal questions. The response rates are shown in Table 11.

Table 11:
Responses to Anecdotal Questions

	Teachers	Parents	Administrators	Total
Respondents	13	3	12	28
Anecdotal Responses (%)	12 (92)	3 (100)	7 (58)	22 (79)

Table 12 shows the seven anecdotal questions that were asked of each respondent. All the questions were optional and open ended. Question B1 limited respondents to positive indicators of effectiveness while questions B2 and B3 limited respondents to negative indicators. The remaining questions allowed respondents to include positive or negative indicators of effectiveness.

Table 12:
Anecdotal Questions

Number	Question
A1	Do you have any other comments that you would like to add about the teaching of literacy in the school, or about this study?
B1	What initiatives do you think have been most effective in improving literacy-teaching practices in the school?
B2	What initiatives did not enhance literacy-teaching practices or may even have deterred students' literacy progress?
B3	What literacy initiatives would you have liked to have seen implemented and believe would have been successful in enhancing literacy in the school?
B4	During the time that Marian has been principal have you witnessed any changes to the school's culture and learning environment that have affected the teaching of literacy?
B5	Do you think that, overall, Marian has had a positive or negative influence on literacy-teaching practices?
B6	Please add any other comments that you may have about this study or about literacy-teaching practices.

Each anecdotal response was analyzed and matched to an intervention and then reviewed to see if the respondents made a positive or negative evaluation of the implementation of one of the nine interventions as shown in Appendix: G. If a negative evaluation was received a score of -1 was allocated to that intervention and if a positive evaluation was given a score of 1 was allocated to that intervention. In total, 28 negative evaluations and 142 positive evaluations were received. The same methodology used for analyzing Part A of the questionnaire was used for Part B. This ensures that comparable measures are used for both sections of the questionnaire. As in the analysis for Part A the aggregate score for Part B will then be the average excess of positive evaluations over negative evaluations. The Wilcoxon Test was used to assess whether the positive evaluations exceed the negative evaluations in a statistically significant manner and the results are given in Table 13.

Table 13:
The Wilcoxon Sign Rank Statistic and the Associated Probability (P) for All Interventions and Observer Groups

Intervention		Administrators	Teachers	Parents	All Groups
Fostering a literacy based school culture and promoting literacy research	Score	0.86	0.71	0.33	0.68
	N	14	21	9	44
	Median	1	1	1	1
	Wilcoxon test (P)	45 (0.2%)	83 (0.0%)	8 (50.8%)	338 (0.0%)
Promoting professional development that centers on literacy instruction	Score	0.71	1.00	-1.00	0.83
	N	7	15	1	23
	Median	1	1	-1	1
	Wilcoxon test (P)	10 (12.5%)	60 (0.0%)	-1 (100.0%)	114 (0.0%)
Implementing the use of a range of literacy assessment tools and appropriate assessment practices	Score	0.67	0.14	0.00	0.33
	N	6	7	2	15
	Median	1	1	0	1
	Wilcoxon test (P)	7 (21.9%)	2 (1.0000)	0 (100.0%)	20 (30.2%)
Providing appropriate supports for support for "at risk" literacy students	Score	0.20	0.71	-0.50	0.39
	N	5	14	4	23
	Median	1	1	-1	1
	Wilcoxon test (P)	2 (100.0%)	38 (0.0129)	-3 (62.5%)	54 (5.9%)
Creating a time for literacy teachers to meet and jointly plan instruction	Score	0.33	1.00	1.00	0.82
	N	3	7	1	11
	Median	1	1	1	1
	Wilcoxon test (P)	1 (100.0%)	14 (0.0156)	1 (100.0%)	27 (1.2%)
Scheduling an uninterrupted literacy teaching block for literacy instruction	Score	1.00	0.00	1.00	0.60
	N	2	2	1	5
	Median	1	0	1	1
	Wilcoxon test (P)	2 (50.0%)	0 (1.0000)	1 (100.0%)	5 (37.5%)
Acquiring appropriate literacy teaching and learning materials, space and resources	Score	0.75	0.83	1.00	0.84
	N	8	12	5	25
	Median	1	1	1	1
	Wilcoxon test (P)	14 (7.0%)	33 (0.0063)	8 (6.3%)	137 (0.0%)
Ensuring a literacy curriculum content framework with instructional methods and models	Score	1.00	0.43	-1.00	0.40
	N	2	7	1	10
	Median	1	1	-1	1
	Wilcoxon test (P)	2 (50.0%)	6 (0.4531)	-1 (100.0%)	11 (0.3438)
Supplying opportunities for literacy based mentoring and coaching	Score	1.00	1.00	1.00	1.00
	N	3	10	1	14
	Median	1	1	1	1
	Wilcoxon test (P)	3 (25.0%)	28 (0.0020)	1 (100.0%)	53 (0.0%)
All Interventions	Score	0.720	0.747	0.280	0.67
	N	50	95	25	170
	Median	1	1	1	1
	Wilcoxon test (P)	459 (0.0%)	1704 (0.0%)	46 (16.6%)	4874 (0.0%)

The results are not as overwhelmingly positive as those in Table 6. At the aggregate group and intervention level 84% of the evaluations are positive and the result is significant at the 99% level. Unfortunately, the number of responses is too small to establish statistically significant results for all group and intervention possibilities. Only 15 of 40 cells are statistically significant at the 95% level and in 5 cases the median is negative 1. Thus while the overall results support the hypothesis that I was effective at implementing the literacy interventions, at the individual intervention and group levels the results are not statistically significant.

The results from applying the non-parametric Kruskal-Wallis test to the groups and interventions are also inconclusive. But if it is assumed that the observations are from a ratio measurements scale rather than an ordinal scale (Stevens, 1946, 1951) then more conclusive results can be achieved. Applying the SAS General Linear Model (GLM) procedure to the data to eliminate the mixing of the two dimensions gives a significant linear fit to the effects. Table 14 summarizes the results for the groups and Table 15 summarizes the results for the nine interventions.

Table 14:
Summary of the Average Scores by Observation Groups

	Teachers	Parents	Administrators
Average score of all responses	0.747	0.280	0.720
Least square means from SAS GLM	0.723	0.269	0.698

Table 15:
Summary of the Average Scores by Interventions

Literacy Intervention	Average score	Least square means
Creating a time for literacy teachers to meet and jointly plan instruction	0.818	0.716
Supplying opportunities for literacy-based mentoring and coaching	1.000	0.878
Fostering a literacy-based school culture and promoting literacy research	0.682	0.623
Scheduling an uninterrupted literacy-teaching block for literacy instruction	0.600	0.541
Promoting professional development that centers on literacy instruction	0.826	0.694
Ensuring a literacy curriculum content framework with instructional methods and models	0.400	0.291
Implementing the use of a range of literacy assessment tools and appropriate assessment practices	0.333	0.244
Providing appropriate supports for at-risk literacy students	0.391	0.316
Acquiring appropriate literacy-teaching and learning materials, space and resources	0.840	0.779

Overall, the two dimensions “literacy intervention” and “group” explain a substantial portion of the variation in the data yet most of this explained variation is coming from the responses of the parent group which are quite markedly different from the teacher and administrator groups. While there are significant differences in the intervention scores these differences are again not statistically significant at the 1% level. Figure 5 compares the interventions scores for Part A and the anecdotal questions. There is a consistency between the two sets of scores. Both sets of scores are showing a significant positive evaluation and the trends in the two sets of scores are similar. Thus while the differences in the average

literacy intervention scores for the anecdotal questions are not statistically significant they are consistent with the differences in the scores for Part A which is statistically significant.

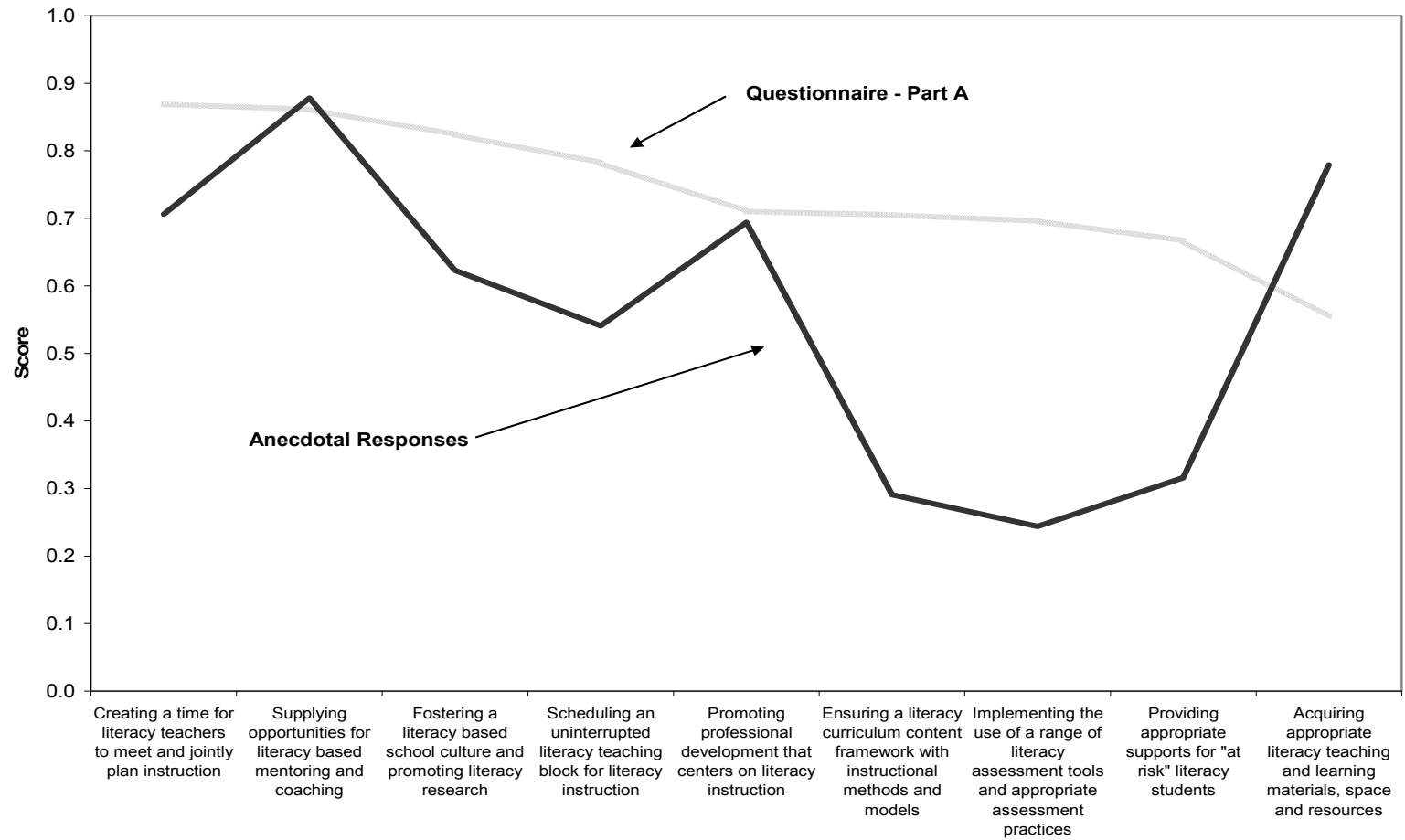


Figure 5:
Least-square Mean Intervention Score: Questionnaire versus Anecdotal

All of the respondents' responses and written comments from the questionnaire and survey are found in Appendix E.

5.3.2.3 Analysis of the Students' DRA Scores

Our school board has not used a consistent format for reporting the comparison of its individual school's *Development Reading Assessment* (DRA) results with board-wide DRA results. This made it difficult to analyze DRA scores. Table 16 contains our students' DRA average scores, the board's average scores and the DRA benchmarks and suggests that the scores are trending upwards during the period. It should be noted that the 2006 data could not be used as some of the data was irretrievably lost at the board level due to a system crash.

Table 16:
DRA Scores: Grade 2

		2002	2003	2004	2005
Fall	School Score	11.09	15.74	15.32	16.21
	Board Average Score	12.89	16.12	16.50	15.69
	Provincial Benchmark	18.00	18.00	18.00	18.00
Spring	School Score	19.60	23.22	29.55	26.03
	Board Average Score	21.02	26.10	26.83	25.47
	Provincial Benchmark	28.00	28.00	28.00	28.00

Four data points are not sufficient for identifying a statistical trend but by applying a simple transformation the spring and fall scores can be standardized and thus double the size of the observation set. Instead of using the raw scores, the scores were standardized by dividing them by the benchmark. Thus the revised scores represent the percent of the DRA benchmark obtained. The transformed observations plus the linear trend model fitted to these transformed data points is shown in Figure 6.

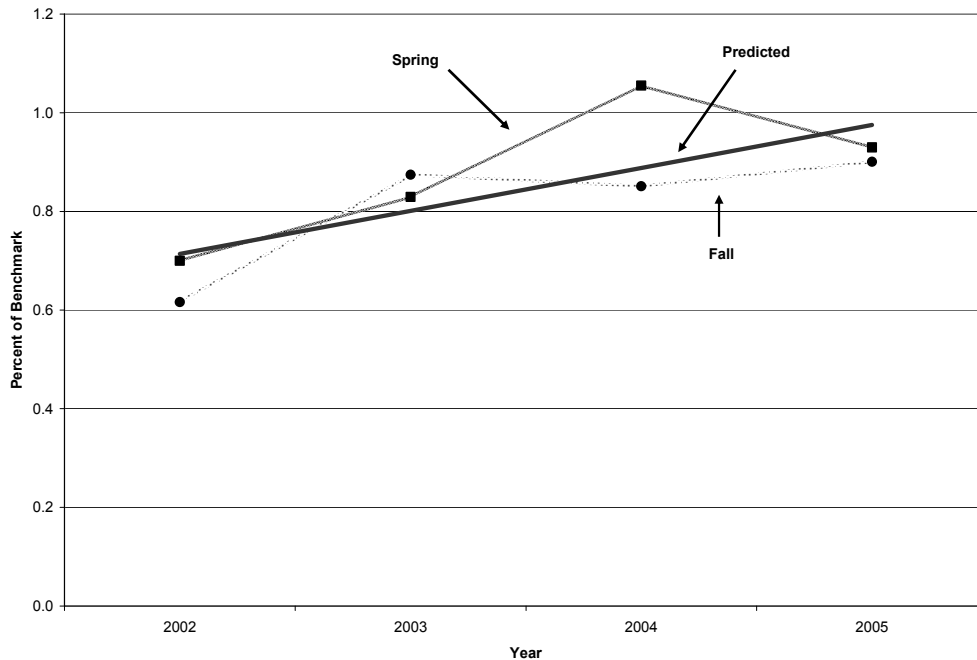


Figure 6:
Percent of DRA Benchmark Achieved by Year

The transformation standardizes the two datasets and the resulting points follow an upward trend line. Table 17 contains summary statistics for the trend line in Figure 6.

Table 17:
Summary Statistics for Fitting a Linear Trend Line to the DRA Scores

	Degrees of Freedom	Sum of Squares	Adjusted R Square	F-value	Probability
Regression	1	0.076	0.52	8.6	2.6%
Residual	6	0.053			
Total	7	0.129			

The results are surprising given that only 8 data observations were available. The summary shows that there is a greater than 95% probability that an upward trend exists in the data. The adjusted R-squared value suggests that 52% of changes in the DRA score are due to a consistent upward trend during the 4 observation years. For the annual growth over the 4

year period, the estimated parameter is 0.16 and translates to a 2.9 point annual growth in the Fall DRA score and 4.5 point annual growth in the Spring DRA.

From Figure 7 and Figure 8, it can be seen that the school improved vis-à-vis the school board average. While a linear regression fit to the data shows an upward trend versus the school board average, it is not statistically significant at the 10% level.

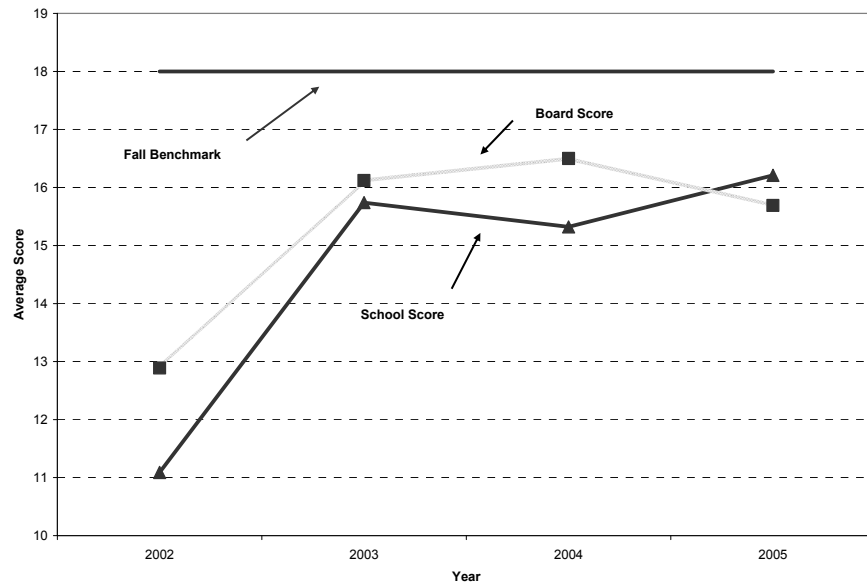


Figure 7:
Fall DRA Scores: Board versus School: Grade 2 Students' Scores

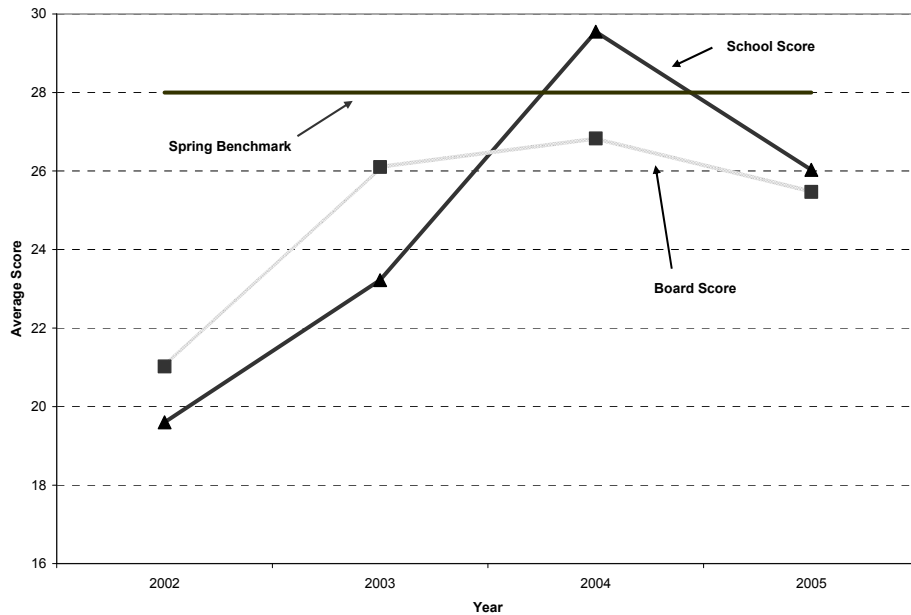


Figure 8:
Spring DRA Scores: Board versus School: Grade 2 Students' Scores

These results show that during the literacy intervention period, our cycle 1, year 2 students made significant progress towards attaining the DRA benchmarks; suggesting that the literacy interventions were effective. Considering that these students were performing at 2/3rd of the DRA benchmark when the interventions were initiated, this is a significant improvement. Additionally, given the fact that our student population became more diversified and harder-to-serve over the period of the study as is discussed in Chapter Four, this upward trend in DRA scores suggests that changes to literacy-teaching practices were taking place that improved students' literacy. This claim is not only supported by the quantitative data analysis of the DRA scores shown in Tables 4, 5 and 6 but also by the qualitative data analysis of the written responses to the questionnaire shown here:

A10: Response #1

...the school readjusted its focus to properly assess and evaluate the students. As a result their teaching practices changed and improved. With team meetings, focused P.D. and an encouragement to share what they learned the students benefited immeasurably.

T2: Comments (A)

Marian places a great deal of emphasis on literacy in our school. She is diligent in reminding her staff to strive to create a very literate group. The population at GECS does not lend itself to high literacy scores; however.

T6: Response #1

DRA. Marian introduced formal reading evaluation of all students twice a year. This has enabled teachers to closely look at each student individually. Teacher's practice has changed based upon the knowledge gleamed from this tool.

The analysis of these data found that there is both quantitative and qualitative evidence to support that the success of the interventions that I implemented as part of improving my practice had a positive impact on students' literacy scores and enhanced literacy-teaching practices.

5.4 Summary of Results

Throughout this chapter, I have given evidence for my "claim to know (my) own educational development" Whitehead (2009, p. 176). The data analysis gives reliable evidence that my study effected changes to my practice and that in my role I enhanced the teaching of literacy. Table 18 shows the methods of triangulation undertaken in my analysis to ensure that my claims are trustworthy.

**Table 18:
Methods of Triangulation Applied to Key Research Questions**

Research Questions	Field Notes & Own Reflections	Questionnaire Part A & B	DRA Scores
Did I develop as a literacy principal?	X Many examples & conclusive	X All 3 respondent groups confirm	X Indirect evidence to support
Was I successful as a literacy principal in implementing literacy interventions?	X Many examples & conclusive	X All 3 respondent groups confirm	X Indirect evidence to support
Did my practice enhance the teaching of literacy?	X Many examples & conclusive	X All 3 respondent groups confirm	X Indirect evidence to support
Did my practice become more collaborative and inclusive?	X Many examples show significant growth in this area	X Some evidence but not conclusive	Not applicable
Did I help to form a literacy-based professional learning community?	Some evidence but not conclusive	Some evidence but not conclusive	Not applicable

The three sets of data show remarkably consistent results. All three sets of data statistically confirm (at the 5% level) that I was effective in positively influencing literacy in the school. Parents, teachers and administrators were unanimous in their positive evaluation and the literacy DRA scores within the school showed a statistically significant upward trend during the period of the interventions.

While the results from all three respondent groups and for all interventions supported my claim of effectiveness there were differences between the various categories. In particular, parents tended to rate my effectiveness significantly lower than both the teachers and administrators. The teacher and administrator groups had remarkably consistent ratings with the administrator group giving slightly higher scores. The results of the questionnaires' anecdotal questions also suggest that all nine literacy interventions were effective and demonstrate the same trends in the respondent groups' responses. As principal, I was least effective at implementing the following two interventions: 1) acquiring appropriate literacy-teaching and learning materials, space and resources and 2) providing appropriate supports for at-risk literacy students.

This analysis validates my own assessment of the improvements made to my practice as a literacy principal and to our literacy results. However, the statistical ranking of the interventions were a great surprise to me. Respondents did not always agree with my assessment of the interventions where I believed I had been most effective, or where I had focussed most effort. This leads me to reflect on these findings and forms my study's final reflection that will be covered in the following chapter.