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Leading the Way: Catholic School Leaders and Action Research

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Introduction

Educational leaders make scores of important education-related decisions each and every day. In Catholic schools, it is not at all unusual for a principal to exert decision making responsibility in areas as disparate as instructional leadership, marketing, capital improvements, finances, and development (Nuzzi, Holter, & Frabutt, 2013). So in this era of increased accountability at the school and student level, where standardized tests are government-mandated and often tied to funding levels, "decisions that have far-reaching consequences or are high-stakes deserve to be investigated thoroughly through the lenses of pertinent data" (Earl & Timperley, 2009, p. 5). Recent research extols the value of problem-based learning strategies in exemplary school leadership preparation programs as one way to provide school leaders with the appropriate tools to systematically use data to make important decisions (Darling-Hammond, Meyerson, LaPointe, & Orr, 2010; Davis, Darling-Hammond, LaPointe, & Meyerson, 2005). These learning strategies may include action research projects, case study analysis, and other applied projects and assignments that link classroom learning and educational theory with the practice of leadership in the local school setting.

Action research is widely invoked as a powerful orientation to practitioner inquiry across a variety of educational and civic contexts (Boothroyd, Fawcett, & Foster-Fishman, 2004; Frabutt, Harvey, & Di Luca, 2010; Stoeker, 2005). Although problem-based learning strategies such as action research have been highlighted as core components of highly effective principal preparation programs, "little research exists regarding its effects on student competencies and performance" (Darling-Hammond et al., 2010, p. 352). Evidence in support of action research as an instrumental component of principals' leadership repertoire tends to be more anecdotal rather than systematic. Researchers and school-based practitioners must therefore collaborate to appropriately evaluate the effect of action research on the skills, behaviours, and values of school leaders. Implemented as a way to understand or even ameliorate a school-based challenge or question of practice, action research in schools can be seen as a problem-based learning strategy, beginning and ending with concrete, empirical insights.

Purpose and Research Questions

The purpose of this study was to address the current gap between the importance of problem-based learning strategies in leadership preparation programs, and the demonstrated effect these strategies have on the knowledge, skills, behaviours, and values of school leaders. Within the context of an educational administration master's degree program, this study examined leadership students' development of exemplary data driven leadership skills, knowledge, behaviours, and values through the problem-based learning strategy of action research. A framework for measuring the effect of action research on the knowledge, skills, and dispositions of school leaders is offered, one that engaged both researchers and practitioners in a critical assessment of what characterizes a mission driven and data informed leader. Said another way, if action research is fundamentally a stance, an orientation to school leadership that prizes the systematic use of data to inform decisions and drive school improvement, how does one know when someone is such a leader? At minimum, leaders use data not only to answer questions about best practices, but also to articulate such questions in the first place.

There were two primary research questions addressed in this inquiry. First, do candidates enrolled in a series of courses on action research methods demonstrate growth in educational research skills such as posing research questions, designing effective inquiry, analyzing qualitative and quantitative data, and interpreting results? Second, having completed said courses and engaged in a year of action research in schools, how do school leaders describe the concrete behaviours and values of a mission driven and data informed leader?

Literature Review

Two major areas are reviewed in order to establish the context for this investigation. An overview of research into effective principal preparation programs is provided, focusing especially on the problem-based learning strategy of action research. Next, a descriptive review outlines the content and delivery of the action research sequence in the Mary Ann Remick Leadership Program, a university-

based principal preparation program designed specifically for aspiring Catholic school leaders (http://ace.nd.edu/leadership/).

Exemplary school leadership programs.

One of the best sources for understanding effective school leadership programs is the nascent body of research commissioned by the Wallace Foundation and carried out over the last decade as the School Leadership Study by scholars at the Stanford Educational Leadership Institute (Darling-Hammond, LaPointe, Meyerson, & Orr, 2007; Darling-Hammond et al, 2010; Davis, Hammond, LaPointe, & Meyerson, 2005; Wallace Foundation, 2010). This body of work has sought to delineate the common marks of excellence across programs that effectively prepare school leaders in the USA. In their 2005 review of research on school leadership preparation, Davis et al. (2005) completed an initial description of the features of effective programs across three domains: content, methods, and structure. They concluded that program content should be research based and exhibit curricular coherence. There should be a wide array of program methods, but primary among them are field-based internships, where students share in some significant leadership responsibility under the guidance of a seasoned administrator; problem-based learning; cohort groups, where students move and work through classes and other activities in the company of colleagues, sharing insights and struggles; and the use of mentors. The overarching structure for delivery of the content may vary, but there should be close collaboration between universities and school leaders in both the design and execution of pre-service and in-service principal formation. A fine-grained analysis drawing on comparative survey and interview data (Darling-Hammond et al., 2010) provided more specificity regarding characteristics of exemplary school leadership programs (see Table 1).

Table 1

Characteristics of Exemplary School Leadership Programs

Characteristic	Description
Research-based Content	Content aligned with professional standards, focused on instruction, organizational development and change management.
Curricular Coherence	Linking goals, learning activities, and assessments around a set of shared values, beliefs, and knowledge about effective organizational practice.
Field-based Internships	Internships that enable the application of leadership knowledge and skills under the guidance of an expert practitioner.
Problem-based Learning Strategies	Case methods, action research, and projects that link theory and practice and support reflection.
Cohort Structures	Cohort grouping that enables collaboration, teamwork, and mutual support.
Mentoring or Coaching	Mentoring or coaching that supports modelling, questioning, observations of practice, and feedback.
Collaboration	Collaboration between universities and school districts to create coherence between training and practice; pipelines for recruitment, preparation, hiring, and induction.

Coherent curriculum that is focused on instruction and school improvement is a *sine qua non* of effective school leadership programs. Exemplary programs prepare principals in how to build a shared vision for instructional improvement and how to elevate not only individual teachers' capacity for reaching it but making the school as efficient and productive as possible. Principals are at the centre of instructional leadership, steadfastly focused on teaching and learning. Thus, they "develop and evaluate curriculum, use data to diagnose the learning needs of students, serve as a coach and mentor to teachers, and plan professional development" (Darling-Hammond et al., 2010, p. 54). Exemplary programs integrate instructional theory and practice to create active, field-connected learning. Such learning is fostered by field-based projects, action research, work in small groups, problem-based learning, case studies, portfolio creation archiving and displaying all student work, and tight connections between internships and coursework.

Effective programs strive to deliver well-designed and tightly integrated coursework and fieldwork. Knowledge, skills, theories, and concepts derived from coursework are put into practice via integrative fieldwork and internship experiences. Programs draw upon school-based action research

and other field-based projects as a means to apply new knowledge in scaffolded but practical settings. In short, exemplary programs consider "theory in the light of practice—and practice in the light of theory," enabling principals to become drivers of their own professional learning, a stance that should continue into their ongoing practice as school leaders (Darling-Hammond et al., 2010, p. 63).

One observes in this summary of best practices the common thread of action research as a vehicle for problem solving and as a tried and true way to link the conceptual with the practical. That action research is counted among the essential elements of effective leadership programs should not be surprising. Action research has a long and cherished history as an effective lever for improving classroom and school practices. Teachers embrace action research to improve their own instruction and to bolster learning outcomes for their students (Burton & Bartlett, 2005; Cannon & Thompson, 2012; Pine, 2009). School leaders invoke action research to examine myriad issues within their school community (James, Milenkiewicz, & Bucknam, 2008), including student performance and achievement (Goldring & Berends, 2009). Within Catholic education as well there is a growing list of exemplars highlighting how the systematic use of data can improve programs, curricula, and overall school functioning (e.g., Beltramo, 2012a, 2012b; Brennan, 2012; Suhy, 2012).

Action research in the Mary Ann Remick Leadership Program.

Since its inception as a degree program in 2006, the Mary Ann Remick Leadership Program has prominently featured action research as part of the formation of future school leaders. Detailed fully in Frabutt, Holter, and Nuzzi (2008) and Holter and Frabutt (2012), the action research sequence encompasses four courses and 11 credit hours spread over one full academic year (Table 2).

Table 2
The Step-by-Step Process of Action Research (AR) in the Mary Ann Remick Leadership Program (based on Mertler, 2012).

Program Phase	**Course Number or Requirement**	**Stages of Action Research (Mertler, 2012)**
Pre-Program (Application)	Applicants are asked to respond to an essay prompt regarding an issue in their school community that is appropriate for action research project.	**Stage 1: Planning Stage** • Identifying and limiting the topic • Gathering information • Reviewing related literature • Developing a research plan
Summer #1	No official coursework; individual consultation with faculty members.	
Academic Year #1	No official coursework; individual consultation with faculty members, completion of action research topic selection rubric.	
Summer #2	EDU 73777: Educational Research and Methodology. Candidates develop an action research plan that is implemented in their school community.	
Academic Year #2	EDU 73886: Action Research in Catholic Schools I. Candidates implement the action research plan developed over the summer, collect data, and begin data analysis plan.	**Stage 2: Acting Stage** • Collecting and analyzing data
	EDU 73887: Action Research in Catholic Schools II. Candidates finalize data collection and analysis, evaluate the impact of their intervention or inquiry, and formulate recommendations and next steps.	**Stage 3: Developing Stage** • Developing an action plan
Summer #3	EDU 73888: Leadership in Catholic Schools. Candidates reflect on the AR process and prepare a research brief and conference poster to disseminate their findings at the school level and to the broader Catholic leadership and action research communities.	**Stage 4: Reflecting Stage** • Sharing and communicating results • Reflecting on the process

Source: Holter, A. C., & Frabutt, J. M. (2012). Mission driven and data informed leadership. *Catholic Education: A Journal of Inquiry and Practice, 15*(2), 253-269.

It seeks to develop a leader who is intensely focused on Catholic school mission while concomitantly informed by pertinent educational data. As a Catholic leadership program, the action research sequence

is anchored by the constructs of spirituality and community. Action research is conceptualised as more than just a sound methodological way of bringing social science to bear on school issues. Action research both draws from and gives life to one's spirituality; similarly, action research is both immersed in and contributes to the school community in which it unfolds.

Over 100 graduates of the Remick Leadership Program have completed action research projects, always targeting an issue or problem with particular import for their school community. Projects have focused on classrooms, programs, the entire school, or the parish as the unit of analysis. Employing both quantitative and qualitative methodologies, projects have examined student academic performance (Klich, 2011), innovative curricular offerings (O'Linn & Scott, 2008), service learning (Mullarkey, 2011), alumni outreach (MacCready, 2011) and a host of other topics[1]. While these action research projects are themselves a manifestation of educational research skill, and there is no doubt that each one sheds much needed light on an important issue in the school community, the time is apt to explore and measure whether and to what extent these leaders are more effective because of this experience. The next step "demands moving beyond the products themselves, to the dispositions, attitudes, and skills that underlie them" (Holter & Frabutt, 2012, p. 265). The following section describes the methodology employed toward that end.

Method

The study employed a longitudinal mixed-method research design to examine discrete action research skills, behaviours, and values of candidates enrolled in a Master of Arts in Educational Administration degree program.

[1] Research questions, purpose statements, and poster summaries of all action research projects conducted by Remick Leadership Program graduates are available online at the Alliance for Catholic Education website: http://ace.nd.edu/leadership/actionresearch/projects

Participants

Participants (*N* = 44) were selected from two cohorts of students enrolled in a Master of Arts in Educational Administration degree program at the University of Notre Dame in South Bend, Indiana, U.S. Students in Cohort A (*n* = 19) were students in their second year of the program who were beginning a 10-credit action research sequence spanning four academic courses. Students in Cohort B (*n* = 25) were students who had recently completed the 10-credit action research sequence and were preparing for graduation from the educational leadership program. Participants from both cohort groups had varying levels of leadership experience in their schools (e.g., lead teaching, assistant/vice principal, principal).

Instruments and Materials

Participants in Cohort A completed a pre- and post-test survey instrument regarding the discrete research skills taught during their introduction to educational research course, the first course in the action research sequence. Cohort B completed a structured personal reflection and participated in a semi-structured focus group session. Before data collection commenced, institutional review board approval was sought and received for the study. Participants provided informed consent for their participation in each component of the study.

Survey instrument.

Participants in Cohort A completed an 18-question survey instrument based on a modified version of Kardish's (2000) preparedness for research survey and Head and Eisenberg's (2010) instrument for assessing students' evaluation of information and research. Since no survey of graduate student preparedness for conducting educational research currently exists, these instruments were modified to fit the specific scope and sequence of the leadership program under study. Participants were asked to rate their preparedness for specific research capacities such as the ability to "relate your research results to the 'bigger picture' of educational research" on a scale of 1 (*Not at all prepared*) to 5 (*Highly prepared*). Participants received a version of this survey instrument at three specific time points

throughout their enrolment in the program: pretest (prior to enrolling in their first action research course), post-test (at the completion of their first action research course), and delayed post-test (in their final course of the action research sequence).

Focus group and personal reflection.

Participants in Cohort B had already completed the action research course sequence and were asked to reflect on their experience through a structured personal reflection and focus group discussion exercise. These exercises were developed with the understanding that "it is essential to your professional growth and development that you seize each and every opportunity—prior to, during, and following your action research study—to engage in reflective practice" (Mertler, 2009, p. 201). As such, these school leadership candidates were asked to reflect on their own experience of action research and respond to questions such as, "What key behavioural changes might we expect to see in a school leader who has implemented an action research project and adopted a data-driven approach to school leadership?" and "What core values or beliefs about education and educational leadership might we expect to see in a school leader who has implemented an action research project and adopted a data-driven approach to school leadership?"

Results

Skill Development: Research Inquiry, Design, and Data Analysis

Descriptive analysis of Cohort A survey data revealed that 21% (4 out of 19) had completed an educational research project in the past, and that 16% (3 out of 19) had presented or published educational research in the past. Furthermore, their two primary expectations for the introduction to educational research course were a) to construct a meaningful research project, and b) to make a difference at the school level. At pretest, candidates felt least prepared (i.e., lowest mean scores) to statistically analyse quantitative data (M = 2.79, SD = .92) and write a research paper in APA style (M = 2.74, SD = .81). The skills most highly scored at the outset were making use of primary research

literature in education (*M* = 3.89, *SD* = .88) and presenting data in short written format (*M* = 3.89, *SD* = .74).

Inferential analysis of the pre- and post-test survey data indicated a statistically significant increase in self-reported preparedness and capacity for all but two of the 14 core research activities assessed on the survey instrument (Table 3).

Table 3

Mean, Standard Deviation, and t-Statistic for Stakeholder Responses to the Leading the Way Survey

	Pretest		Post-test		*df*	*t*-stat
	M	*SD*	*M*	*SD*		
1. Understand contemporary concepts/research in the field of education	3.47	0.96	4.42	0.61	19	3.83*
2. Make use of primary scientific research literature in your field (e.g., journal articles)	3.89	0.88	4.74	0.45	19	4.09*
3. Formulate specific research questions	3.33	0.84	4.44	0.62	18	4.17*
4. Select appropriate data collection instruments (e.g., Survey, interview protocols)	3.00	0.88	4.16	0.83	19	4.16*
5. Design research methods appropriate for your questions of interest	2.79	0.98	4.00	0.82	19	5.75*
6. Collect and organize data	3.53	0.90	4.47	0.61	19	5.30*
7. Statistically analyse quantitative data	2.79	0.92	3.89	0.81	19	5.50*
8. Code and analyse qualitative data	2.50	0.99	4.33	0.77	18	7.46*
9. Interpret data by relating results back to the original research questions	3.11	0.88	4.16	0.83	19	5.04*
10. Reformulate your original research questions (as appropriate)	3.16	0.83	4.21	0.54	19	5.04*
11. Relate results to the “bigger picture” in the field of education	3.42	0.77	4.32	0.58	19	4.82*
12. Orally communicate the results of research projects	3.84	0.76	4.37	0.60	19	2.54*
13. Present data in a short, written format (e.g., handout, research brief, etc.)	3.89	0.74	3.94	1.03	19	0.24
14. Write a research paper following the American Psychological Association (APA) style	2.74	0.81	4.16	0.60	19	8.95*

Note. * $p < .01$

For example, participants reported a statistically significant increase in their understanding of research in the field of education (Pre-test *M* = 3.47, *SD* = .96 vs. Post-test *M* = 4.42, *SD* = .61), their use of primary research in their field (Pre-test *M* = 3.89, SD = .88 vs. Post-test *M* = 4.74, *SD* .45) and their ability to select appropriate data collection instruments (Pre-test *M* = 3.00, *SD* = .88 vs. Post-test *M* = 4.16, *SD* = .83). Additionally, participants reported statistically significant changes in their level of preparation for collecting and organizing data, interpreting data, and relating results to the "bigger picture" in the field of education. No difference was detected in their reported competency in orally communicating the results of research or their ability to present data in a short, written format.

Behaviours of the Mission Driven and Data Informed Leader

Participants in Cohort B provided 77 individual behavior statements that characterise a school leader who has implemented an action research project and adopted a data-driven approach to school leadership. These statements were developed from their own experience as a student in the leadership program under study and after having successfully completed the 10-credit action research sequence. Each of the 77 statements was read several times by two raters and they were organized into major themes using the constant-comparative method of qualitative coding.

Six behavioural domains emerged from the data, illustrated in Figure 1: a) Uses data to monitor progress, inform decision making, and guide change (41%); b) Acts proactively, exhibiting qualities of patience, confidence, efficiency, and assertiveness (19%); c) Consults educational research and seeks best practice (14%); d) Facilitates community input and collaboration (13%); e) Focuses on student achievement, teaching, and learning (10%); and, f) Encourages faculty and staff to be data-informed (4%).

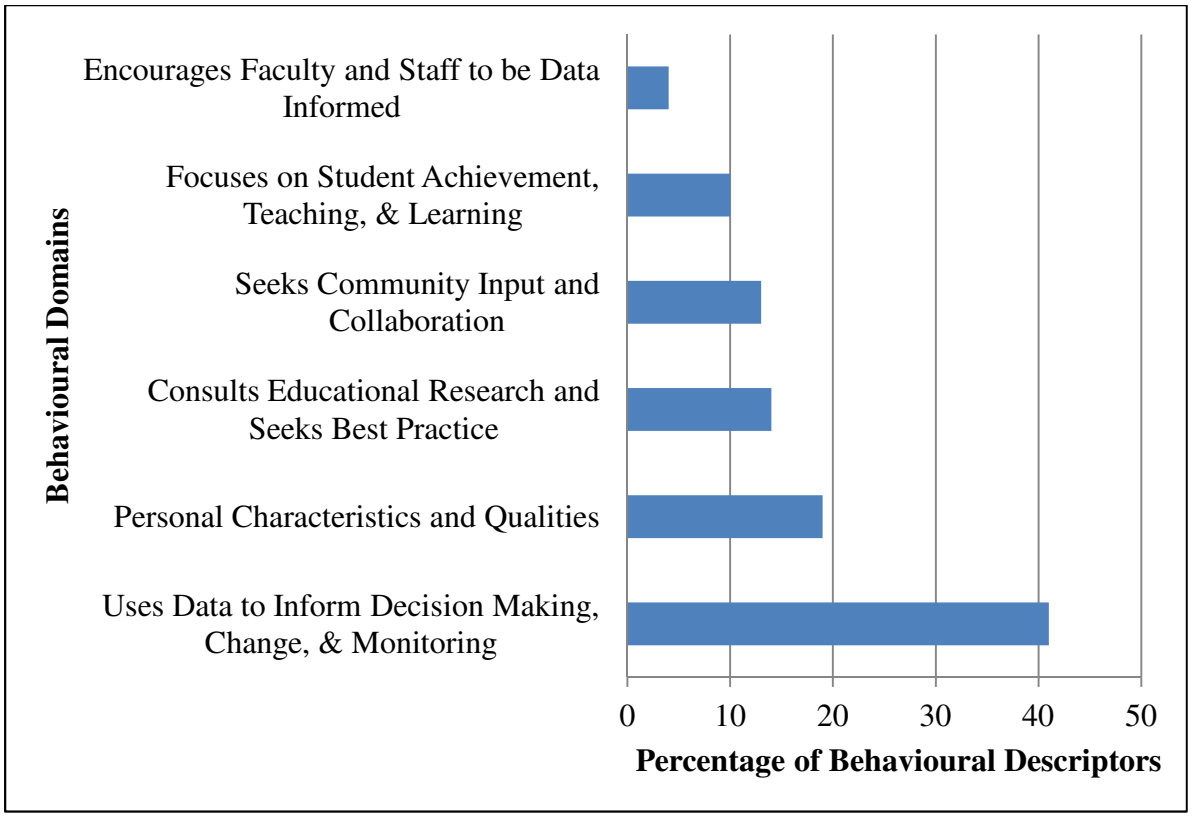

Figure 1. Major behavioural domains exhibited by the data driven leader based on coding of 77 text responses.

The following sections use the participants' comments to describe each thematic area in more detail.

Uses data to monitor progress, inform decision making, and guide change.

Four out of every ten behavioural descriptions described the data driven leader as someone who skillfully uses data in three primary ways: to monitor the progress, efficacy, and function of programs and practices; to inform teaching and administrative decision making processes at both the classroom and school level; and to facilitate and guide organisational change efforts. First, data informed leaders regularly attune to the efficacy of programs, interventions, curricula, etc. and whether they are achieving their stated goals. Behavioural statements referred to pre- and post-testing, for example, as a basic way to measure progress and growth. One study participant described that "data-informed leaders will be continually assessing the impact of their practices in the fulfillment of their

missions." Second, participants' statements described how data are useful in the constant, daily flow of decision making. Participants referenced "a clear method to find a solution" and a knowledge of how to "gather facts and data so that decisions are backed by evidence." Third, mission driven and data informed leaders are characterised by a commitment to the regular and continuous systematic use of data in order to guide organisational change. One participant wrote:

> The school leader who has done an AR project will know that while data is great, it is what you do with that data that is of the real importance. Is it data just to say you collected it, or is it driving potential decisions?

Others referenced how relentlessly focusing on mission and data means that they "cannot settle for the status quo." Instead this particular type of leadership mindset is trained on building a "culture of perpetual renewal" in the school community.

Acts proactively, exhibiting qualities of patience, confidence, efficiency, and assertiveness.

Nearly 20% of participants' statements describing the traits of a mission driven and data informed leader made reference to a positive set of behavioural characteristics, most prominently featuring confidence, patience, efficiency, and assertiveness. In this domain, the general tenor of the comments suggested that a strong sense of empowerment results from being able to gather information systematically and solve problems. This skill set transforms their stance from reactive to proactive, and allows them to be intentional in all of their actions. For example, data driven leaders can assertively use data to encourage support and enlist resources from a variety of school stakeholders including the pastor, parents, and the school board. One participant commented on a heightened sense of leadership confidence: "Data driven leaders are more confident with respect to engaging in courageous conversations that will help to improve the school community." Why such difficult and challenging conversations may be possible is perhaps addressed by another's comment that mission driven and data informed leaders are not "afraid of failure…to these leaders, 'failure' is not true failure,

rather it is a part of learning and gathering information." Another participant clarified that having completed the rigours of action research, "I'm empowered to stand up confidently for my decisions knowing that I consulted multiple resources before deciding." Finally, patience and time management were mentioned, with participants explaining that while step-by-step change processes require focused time and attention, the desired change is not immediately apparent. The patience needed in completing a year-long action research process was instructive, for "leaders will use this same patience when dealing with the day-to-day issues they face and when trying to implement any worthwhile changes or improvements."

Consults educational research and seeks best practice.

Fourteen percent of the behavioural statements described a mission driven and data informed leader as someone that regularly consults extant educational research and reviews others' evidence-based educational practices in order to inform their own effectiveness and the efficacy of their school. Such leaders know they can look to research rather than "reinventing the wheel if it has been done before." Comments mentioned reading research publications in regard to implementation of programs, exploring new methods of instruction, and "a deeper understanding of how teachers teach and how students learn." Moreover, being a regular consumer of educational research can inspire new and innovative practices in their own school community. In reviewing potential sources of educational information, one participant explained that they would be more critical and discerning after their own exposure to educational action research:

> It used to be that any marketer or fancy website could support my decisions. Now, I find myself looking towards actual educational research journals before vendor sites. After the research has been read, then I choose the vendors, they do not choose me.

In sum, participants' descriptions acknowledged that the mission driven and data informed leader sees his/her own school as part of a larger learning context, meaning that both the field of educational

research and other practitioner-researchers' experience have much insight to offer for refining the practices within his/her own building.

Facilitates community input and collaboration.

Thirteen percent of coded responses stressed that leaders formed via a mission driven and data informed framework are likely to actively embrace stakeholder input and seek collaboration. Such leaders involve multiple stakeholders—considering a variety of perspectives—in defining problems, articulating potential solutions, and setting a long-term vision. One respondent described that these leaders will develop a "collegial culture," which is, in fact, "an inversion of the top down approach so that teachers are now identified as key players in the process." By evincing a willingness to listen to all relevant input and weigh decisions carefully, mission driven and data informed leaders strive for a "collaborative approach to help make informed decisions." In the end, one participant noted, this kind of process brings greater transparency to the operation of the school.

Focuses on student achievement, teaching and learning.

A cluster of participants' comments—about one in 10—described behaviours of the data informed leader that expressly focus on student achievement, teaching, and learning. The behavioural traits in this category essentially build upon the behaviours mentioned earlier in the first and largest domain, using data to monitor progress, inform decision making, and guide change. The difference is that in this category, those behaviours are honed in a very particular way on enhancing achievement and instruction. For example, participants' behavioural descriptions mentioned creating a culture "where data analysis of student work is encouraged." In other instances, comments referred to the use of data in curricular decisions, evaluation of instructional quality, and in the interpretation of student achievement scores.

Encourages faculty and staff to be data informed.

Only a few comments, about four percent of the overall coded total, described behaviours in which the leader explicitly encourages faculty and staff to be data informed in their own practice. These instances centred on creating a climate that values teachers' collection and use of student data to inform practice and choices made within the context of their own classrooms. For example, one respondent said that a mission driven and data informed leader would "encourage teachers to use data in their classrooms (i.e., test/quiz results) to evaluate the strengths and weaknesses of their lesson plans and teaching strategies."

Values and Beliefs of the Mission Driven and Data Informed Leader

Following the same analysis approach, 80 value and belief statements of Cohort B were organised into five major themes using the constant-comparative method of qualitative coding. The value domains that emerged, depicted in Figure 2, were: a) Believes in data to monitor progress, inform decision making, and guide change (57%); b) Embraces personal characteristics and qualities such as self-reflection, patience, accountability, and a thirst for life-long learning (22%); c) Values community input and collaboration (11%); d) Values educational research (6%); and e) Believes that mission driven and data informed leadership instantiates Catholic identity (4%).

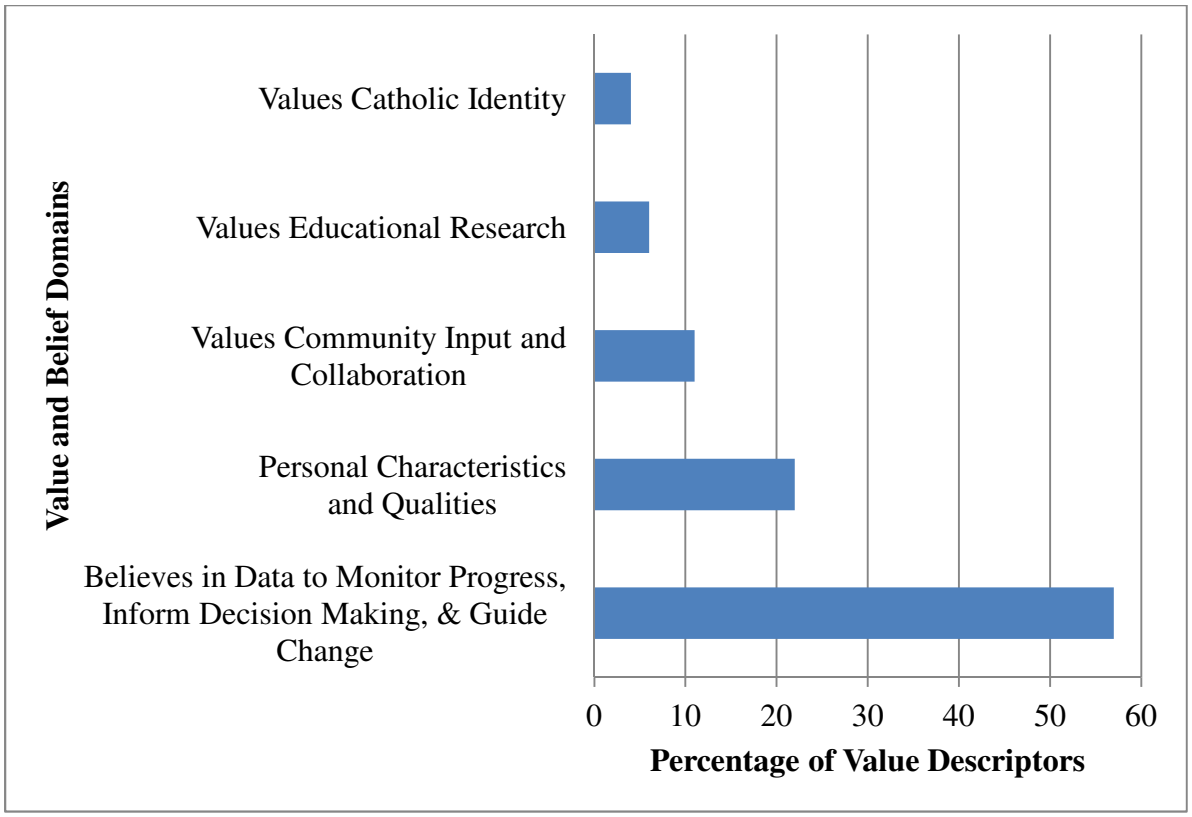

Figure 2. Major belief and value domains exhibited by the data driven leader based on coding of 80 text responses.

Most apparent about the value descriptions provided by participants and their subsequent categorisation is the consonance between the thematic areas revealed for both the behavior and value prompts. In both cases, the four most frequently described areas were identical. That is, whether expressed as a behavior (what leaders do) or a value (what leaders believe in or prize), a similar pattern emerged. The major difference appears to be only a semantic one. For example, in the case of the most frequently occurring category, the operative dynamic is using data to monitor progress, inform decision making, and guide change. These findings indicated a value-behavior consistency, in that leaders both explicitly value the process and describe engaging in it. In lieu of providing essentially similar descriptions for the four recurring value domains, Table 4 encapsulates these themes in summary form by providing several representative quotations.

Table 4

Major Value Domains and Representative Quotations from Participant Responses

Value Domain	Representative Quotations
Data to monitor progress, inform decision making, and guide change	-- Unlike administrators who focus solely on day to day operations, the data-driven leader gears himself to seeking change and continual renewal of the educational program. -- Through action research, the school leader projects to all in the community that they value informed decision making. Being data driven requires more effort than making decisions based on whim or opinion. -- Leaders are change agents who inspire and enable the entire school community to achieve their potential. Data driven leaders use all the research and resources at their disposal to assess ways to enhance the school environment.
Personal characteristics and qualities	-- Reflective—building in an evaluative nature in their own practice as principal. -- We are called to self-evaluation in order to use God's gifts to improve as educators and educational institutions. -- Accountability – through the AR process school leaders become more aware of setting goals to make deadlines. We also learned to measure our data and take responsibility for our results, displaying accountability can reflect on your school community.
Community input and collaboration	-- Data enables leaders work collaboratively with teams/committees to align resources with priorities. -- Collaboration – school leaders through AR projects are more aware that not everything can be done alone; you have to look to your peers and colleagues to accomplish the main goal. -- Educational leaders who have implemented action research projects understand the importance of participation and collaboration because the individual leaders cannot make changes without first acquiring data from others and getting the support to implement change.
Values educational research	-- The leader is expected to be a continuous learner reading up-to-date magazines and journals. -- Commitment to being informed by research. -- The leader who has done an AR project will be able to look at previous research and connect it to the situation at their school. They will look for research that informs them, but also has universality to it, so it can be applied locally.

The one value domain evident in these data that was not mentioned in the behavioural descriptions centred on how Catholic identity is linked to data-based inquiry. One respondent described that using action research is a vehicle for social justice. Moreover, a mission driven leader, "Values a social justice perspective in meeting the needs of the community and fulfilling the school mission." Action research often strives for organisational and personal improvement, through iterative cycles of doing, analyzing, refining. This process was described from a theological perspective when one participant described the value orientation of mission driven and data informed leaders:

> Embracing the theology of the Incarnation is a core belief for these administrators. We must continually seek to develop ourselves and offer others opportunities to do the same. The more fully human we become the closer to Christ's divinity we reach. Striving to be better tomorrow than we are today is a necessary component in explicitly experiencing this aspect of our faith.

Discussion

The current study represents a foray into bridging the evidence chasm between assertions that problem-based learning strategies such as action research are effective in principal formation and beginning to discern how and why that may be so. As Taylor, Cordiero, and Chrispeels (2009) have pointed out, "in spite of its prevalence in teacher education, the use of action research as a pedagogical approach in leadership preparation programs is much less common, and consequently little research exists regarding its effects on student competencies and performances" (2009, p. 352). Data derived from this study allow some tentative mapping of the actual skills, behaviours, and values that school leaders may evince as a result of deep exposure to practitioner-driven action research.

Findings from this study indicated that school leaders engaged in the action research sequence reported significantly greater facility in completing key research-related activities. Their self-assessment revealed significant gains in their preparedness to formulate a research question, select appropriate data collection instruments, design workable research methods, collect and organise data, analyse data,

and make sound interpretations based on their inquiry. School leadership candidates trained via this approach exhibit these aforementioned skills in the context of a degree program and for completion of particular degree requirements, but the deeper rationale behind offering an action research sequence is that this orientation to inquiry becomes a professional habit. The intention is that through immersion in the action research sequence, leaders develop an inquiry-driven and results oriented "stance…toward knowledge and its relationship to practice" (Cochran-Smith & Lytle, 2009, p. 288). The self-report data recounted here make a case that these leaders are indeed developing the concrete skills required to do so.

The qualitative data provided by action research participants add more coloration to the dynamics of mission driven and data informed leadership. In their own words, leadership candidates described that above all, strong leaders actively use data to monitor school progress, detect and measure change, and inform their day-to-day decision making. True to the embedded and often participatory nature of action research, these leadership candidates valued the importance of stakeholder collaboration and input. Candidates also described a pragmatic orientation to educational research, consulting journals, databases, and research reviews with an eye toward garnering the best of "what works" and applying it in their own contexts.

Perhaps most surprising among the qualitative behavior and value descriptions offered by the study participants were those that moved beyond a technical skill (e.g., analysing quantitative data) to the changes they described regarding personal leadership characteristics. In conceiving and delivering the action research sequence there is no direct pedagogy or content that addresses leadership behaviours such as efficiency, accountability, assertiveness, or confidence. Yet leadership candidates formed via this model report that as a result of the action research experience there is a palpable confidence and empowerment toward school leadership. This is clearly an area for additional

exploration for it is inestimable how much impact confidence and empowerment can have on one's approach to the countless demands of school leadership.

While this study breaks new ground in describing mission driven and data informed leaders, a clear limitation is its reliance on self-report of behaviours rather than actual observation, event sampling, behavioural logs, and the like. Another limitation is inherent in the researchers' approach of conducting action research on their own teaching and educational practice. Participants were enrolled in and had just completed their university-based preparation program for which the researchers were their major professors. There is a possibility that participants might have provided socially desirable and perhaps less critical feedback about the action research courses.

Conclusion

This investigation pushes beyond anecdote in order to examine how action research contributes to school leadership formation in the context of selected Catholic schools. Using a sample of practitioners immersed in rigorous leadership preparation and steeped in action research methods allowed for a deep probing of the growing competencies of these leaders. Allowing these leaders to reflect on how elements of the action research courses contributed to the behaviours and values of a mission driven and data informed leader is instructive for the field of educational administration and for those involved in directing school leadership preparation efforts. This inquiry adds to the ongoing conversation discerning how best to challenge leadership candidates while they are in preparation programs, so that they can be prepared most effectively for the many opportunities and challenges that lie ahead.

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