

## A provincial perspective on differentiated instruction: The Alberta Initiative for School Improvement (AISI)

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This paper reports the outcomes of a Western Canadian research review of site-based research projects focused on implementing effective practices supporting differentiated instruction (DI). The projects were carried out as part of a large-scale school improvement initiative, the Alberta Initiative for School Improvement (AISI), in Alberta, Canada. The research incorporates an examination of annual reports from 25 projects that were identified as having a positive impact on student learning over a three-year period (2003-2006); focus group interviews with representatives from 18 schools and districts drawn from the above noted sample, and telephone interviews with schools or districts that did not attend the focus group. Results reveal that addressing student diversity and providing the best learning opportunities for all children across Kindergarten to Grade 12 schools requires recognition that differentiation requires time, training, intentional planning and long-term commitment on the part of educators, government and wider school communities. To expand upon the applied nature of this meta-synthesis, trends, issues, challenges and effective practices related to the AISI DI projects will be discussed. The application of these findings to other large-scale school improvement initiatives generally is outlined.

### INTRODUCTION

The last decade has seen significant change in the student populations of Alberta schools. The final report of the Alberta Commission on Learning (2003) substantiates the demographic trends that teachers and administrators have noted in their schools and districts – in Alberta and across the country – the Canadian population is becoming increasingly diverse. In Alberta, increasing immigration rates fuelled by the province's strong economy, continuing urbanization, and a growing Aboriginal population have had an impact on the province's education system (see Alberta Commission on Learning, 2003). Alberta schools are welcoming increasing numbers of children from other countries, traditions, languages and cultures making high-diversity classrooms one of the defining features of Alberta's schools (Alberta Education, 2009).

In addition to variance in cognitive, affective, physical, and communicative development, today's classrooms are diverse with respect to culture, ethnicity, language and socioeconomic background. Typical classrooms might include students from varied cultural backgrounds; students who are classified as gifted and talented; students who are reading below grade level; students with attentional,

behavioural and motivational problems; students with limited proficiency in the language of instruction; alongside students with severe disabilities and those with specific needs resulting from, for example, language and communication disabilities, limited vision, motor disabilities, and learning disabilities. Clearly, these demographic changes create new challenges and opportunities for today's educators faced with the responsibility of ensuring that each student reaches the highest level of achievement.

This paper outlines how one Canadian province responded to the challenge of learner diversity in the classroom through implementing Differentiated Instruction (DI) projects carried out as part of large-scale school improvement initiative, the Alberta Initiative for School Improvement (AISI). Typically, AISI initiatives are innovations around educational practices piloted in schools and school districts with the aim of improving student learning in observable and measureable ways. This research review was exploratory in nature and conducted to provide information to inform Alberta Kindergarten to Grade 12 school jurisdictions and Alberta Education in their ongoing efforts to enhance and support differentiated instruction to improve student learning. In what follows, we will first briefly outline the background, scope and applied nature of AISI, then outline the study and analysis of a three-year cycle of provincial AISI projects developed under the theme of Differentiated Instruction (DI), and finally, explore the significance of the findings of this provincial research review to other large-scale school improvement initiatives more generally.

## **BACKGROUND AND SCOPE OF AISI**

AISI is a large-scale school improvement initiative developed through a collaborative partnership between the Alberta government and its educational partners. The partnership is steered by a provincial committee with representation that includes the Alberta School Councils' Association, the Alberta School Boards' Association, the Association of School Business Officials of Alberta, The Alberta Teachers' Association, the College of Alberta School Superintendents, Alberta Education, and the University Faculties of Education. The AISI partners state that the goal of AISI is to "improve student learning through initiatives that enhance student engagement and performance and reflect the unique needs and circumstances of each [Alberta] school authority" (Alberta Education, 2008).

Established in 1999, and implemented by Alberta school authorities in the 2000–2001 school year, AISI has provided funding for every school authority in the province to establish its own student learning initiatives and school improvement projects. In this way, AISI can be seen as a large group of site-based research projects all focused on improving learning. Divided into three-year cycles, AISI seeks to establish a community of trust, enthusiasm for locally initiated site-based research projects, and professional collaborations among the participating partners (AISI Background Information: <http://education.alberta.ca/admin/aisi/about.aspx>).

The AISI funding is targeted, and is specifically provided to school authorities for compelling local initiatives that are focused on improving student learning. This funding is represented by a cumulative

investment of over \$600 million dollars between the years 2000-2009. In total, over 1,600 AISI projects have been enacted in the province of Alberta, and all provincially funded school authorities in Alberta have participated at some point in AISI within the past nine years. Over 800 AISI projects were developed and implemented during the first Cycle (2000-2003) and 460 projects were approved for the second Cycle of AISI, which began in September 2003. AISI Cycle 3 (2006-2009) comprised 380 approved projects. The significant reduction in projects over the three cycles is accounted for in a movement towards more jurisdictionally focused school improvement versus numerous small school-based projects within a jurisdiction. Cycle 2 (2003-2006) in particular, built on the enthusiasm and commitment from the first cycle of AISI (2000-2003) and expanded its sphere of influence to even greater numbers of Alberta teachers and students by moving towards a more jurisdictional focus. Cycle 2 also saw an attention by school authorities to refining outcome measures, more effectively documenting project impacts on student achievement, analyzing promising practices, and then disseminating the findings within the jurisdiction for educators not involved in the site-based research, and across the province via an annual conference.

With over nine years of implementation, AISI has had a profound effect on the culture of schools in Alberta, by bringing teachers together around compelling local educational needs, and then empowering these same school communities to use research (their own site-based research and an existing body of educational research) as a means to continually improve student engagement and learning (McRae, 2009). AISI Cycle 3 has been characterized by the collaborative inquiry of teachers, and has emphasized innovation and research with a concerted effort to extend “lessons learned” in the projects through a focus on data analysis, professional learning opportunities and the expansion of knowledge sharing and dissemination of the project findings.

In the remainder of this paper, we focus on the study and analysis of AISI site-based research projects carried out between the years 2003 -2006 (AISI Cycle 2) that had a primary focus on implementation of effective practices supporting differentiated instruction (DI). In these projects, and following current conceptualizations of DI in the literature (see for example Dodge, 2005; Drapeau, 2004; Hall, 2002; Heacox, 2002; Tomlinson & Allan, 2000) differentiated instruction was characterized as a way of thinking about and approaching the planning and implementation of curriculum and instruction that acknowledges that individual learners may have different levels of aptitude, achievement, interest, motivation, needs and ability (Tomlinson, 2001; Tomlinson & McTighe, 2006). Within the reviewed AISI projects, the realities of student variance was recognized and accommodated by offering multiple avenues and options for students to access curricular content, make sense of concepts and skills, and demonstrate learning. It is important to highlight that these AISI DI projects shared an underlying philosophical approach to student learning, rather than a prescribed set of pedagogical practices. As a result, effectiveness cannot be delimited solely to what happened in the classroom(s). Rather, these projects reflect a complex and varied blend of responsive teaching strategies, assessment practices and professional learning activities, as well as the supportive behaviours of administrators, parents and district offices. In keeping with this reality, this paper does not attempt to capture readily applicable

pedagogies as “recipes”, but instead attempts to document a range of practices, processes, strategies, systems, and networks of relationships that supported implementation.

## **METHODS**

The AISI initiative can be thought of as a set of quasi-experimental projects focused on improving student learning and measured by change over time on project target outcomes identified by each individual project. In essence, each AISI project is conducted as a one-group pre-test/post-test design or time-series design (Alberta Education, 2007).

This was an exploratory study and was not designed to be predictive by nature. Although data were triangulated and the findings of this report consistently validated, the research team recognizes the limitations, especially the diversity and variance of data gathering methods and measures represented by the AISI projects under review for this study. However, the authors also acknowledges that the site-based research conducted by the 25 school authorities in the projects reviewed has also contributed to each authority’s own contextualized understanding of school improvement and differentiated instruction. Through a reflective process of inquiry and research, each particular community of learners developed instructional strategies, educational practices, and a deeper knowledge of the environments within which they support student learning. The pragmatic ways by which the AISI projects reviewed could address issues and solve problems unique to their needs and circumstances has been captured by the research team, with the intent of supporting larger system-level knowledge mobilization.

The sample of projects for this review was selected by Alberta Education’s School Improvement Branch (SIB). The SIB calculated effect sizes<sup>1,2</sup> to determine which AISI DI projects have had significant impacts on student learning. The sample provided by SIB included 25 projects that had statistically significant effect size (small, medium or large) on any of the following student learning measures: 1) project measures based on Provincial Achievement Tests (PAT) or Diploma Examination (Dip) results; and 2) project measures based on results of standardized tests or locally developed student achievement measures. For the purpose of this review, projects were combined to give a provincial picture. All data on student learning, both baseline and results, were converted to a common scale (e.g., standard score) that permits comparison of improvement, regardless of the type of measure school authorities used. Combining results across projects is a way of introducing both replication and differentiation in the design.

Detailed information about the research methodology, including project selection criteria and data analysis techniques employed on selected projects can be found in the AISI Improving Student Learning Summary Report for Cycle 2 (2003-2006) (Alberta Education, 2007).

### **Data Sources**

Three sources of data were analyzed for this meta-synthesis of AISI Differentiated Instruction site-based research projects: 1) annual reports from the 25 selected projects from Cycle 2 (2003-2006); 2)

findings from a day long focus group interview of representatives (e.g., principals, teachers, district level co-ordinators) from 18 schools or districts drawn from the above noted sample (including individual written responses to a series of open-ended questions) and 3) findings from telephone interviews with a sampling of schools or districts not attending the focus group. Throughout this article, “AISI project(s)” refers to one or more of these three data sources.

### **Procedures**

As noted above, the 25 AISI projects reviewed for this study were selected by Alberta Education’s School Improvement Branch (SIB) based on a statistical analysis of project effectiveness. A research team from the University of Alberta read and coded the written annual reports from the 25 selected projects. The document analysis was double blind, using two reviewers. In analyzing the content of the written reports, a process was enacted to identify, code, and categorize the primary patterns in the data (Patton, 1990). “The qualitative analyst’s effort at uncovering patterns, themes, and categories is a creative process that requires making carefully considered judgments about what is really significant and meaningful in the data” (Patton, 1990, p. 406). The categories created as the reviewers clustered the data became the basis for the organization and conceptualization of this data. Document analysis of the written reports was used to select sub-samples for a focus group and telephone interviews. Reviewers selected 18 projects for participation in the focus group. Criteria for this purposive sampling included: unique practices or insights shared in the written report, unique settings or contexts (for example, a charter school or a school with a large Aboriginal population), and/or reports that were strongly representative of the general themes identified in the document review and analysis. Focus group and interview questions were refined based on the emerging themes and issues. Focus group participants received written invitations to participate, consisting of a detailed information letter and consent form. The purpose of the research review was clearly outlined, along with research participant activities, dissemination plans, and participant rights. The focus group was conducted by the University of Alberta research team (two principal investigators and one research assistant). The focus group was approximately five hours in length. It was audio-recorded and transcribed. In addition, the reviewers conducted telephone interviews with a sample of remaining projects from the study. Interviews used similar questions to those used in the focus group, and were approximately 60 minutes in duration. A research assistant independently reviewed, coded, and thematized transcripts and notes taken from the focus group and interviews. These findings were triangulated with data drawn from the annual written reports.

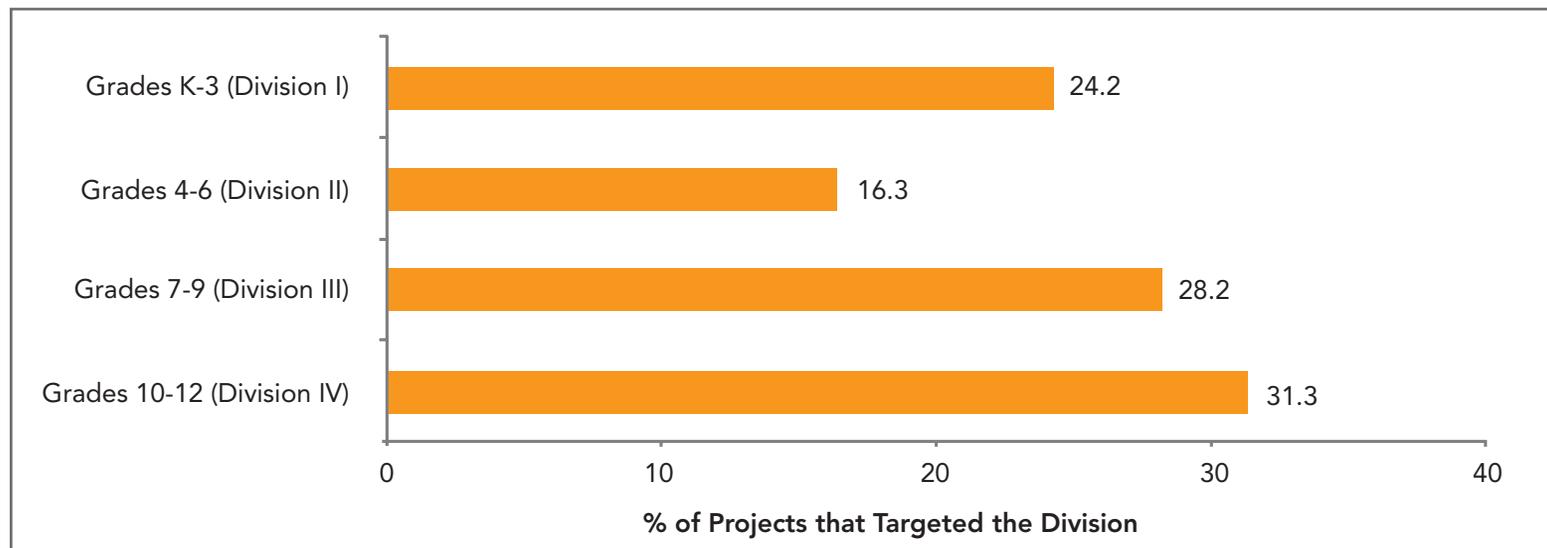
### **RESULTS**

This study reviewed 25 AISI projects that had a positive impact on student learning and sought to transform the challenges posed by increasing learner diversity in the classroom into opportunities for growth for all learners through utilizing DI practices.

### Scope and Foci of Projects

The AISI projects reviewed had worked through a three-year action research cycle that involved over 70,000 students in a variety of settings and contexts (e.g., rural, urban, large and small school districts) and across various grade levels (divisions). Figure 1 below illustrates the divisions targeted by the 25 projects.

Figure 1. Distribution of divisions targeted in AISI Differentiated Instructions Projects



The AISI projects reviewed used a variety of curriculum and instructional strategies (e.g. flexible grouping, tiered assignments, learning style profiles—see Appendix A) to respond to student diversity and differences in learning needs. Within all AISI projects reviewed, differentiation of curriculum and instruction was a data informed process that was guided by teacher assessment of students' readiness, interest, and learning profile. The majority (64%) of projects reviewed focused differentiation efforts around all students in inclusive classroom environments. The remaining projects targeted differentiated instruction and learning initiatives for specific groups of learners, including special education students, English language learners, highly able/gifted learners, and students considered at risk for leaving school before completion and disengaged learners. As noted, each of the 25 school authorities in the projects reviewed developed instructional strategies and educational practices based on their contextualized understanding of the environments within which they support student learning. The research findings that follow provide insight into the wide range of opinions held by study participants, not a population at large. The 25 projects studied focus on the successful impacts on student learning. Source data were not reviewed for AISI projects that were deemed to have been unsuccessful. While the findings should be helpful for setting general directions or goals, they may not be applicable in other contexts.

### Key Findings

A number of themes, strategies, and challenges were identified through analysis of the reviewed project reports, and further elaborated upon in the day-long focus group and through telephone interviews. For the purposes of this paper, the patterns emerging from this review have been grouped into two broad categories:

1. **Effective pedagogies and learning supports:** These themes pertain specifically to instructional practices that had a direct impact on students' learning experiences in the AISI projects under review.
2. **Effective project supports:** These themes pertain to the infrastructures and professional learning practices at the site and district level that were required for pedagogical approaches and learning supports to be implemented effectively.

Quotations included in this article under the sections entitled "In their own words..." have been drawn directly from the reviewed AISI project reports, focus group and telephone interviews. Quotations have been put forth in a verbatim fashion. The key findings below are not ranked in any particular order.

1. **Effective pedagogies and learning supports**

*Theme 1.1. Effective differentiation begins with and is shaped by ongoing assessment for learning activities.* Assessment was used as a teaching tool that drives and extends instruction and helps teachers target their efforts to differentiate learning activities as effectively as possible. In many projects, efforts to differentiate learning were inseparable from the practices of assessment for learning. Effective differentiation entailed knowing students' progress as it unfolded and monitoring learning in unique ways, based on where students began differentiating their learning.

**In their own words...**

"Teachers have become more skilled at evaluating student work for continued student learning and success...evaluation has become part of the planning process and...teachers are more aware of what they are assessing and why".

*Theme 1.2. Differentiated instruction enhances student self-confidence and engagement.* When learning activities recognized and accommodated individual strengths, challenges, interests and readiness levels, more students had the opportunity to learn and to feel successful as learners. Students' self-confidence increased when they were given meaningful opportunities to use and demonstrate their competencies, gifts and talents. Provision of choices to access required content and provision of varied response options to express required learning appeared to improve students' sense of responsibility for their learning, particularly at the junior high level.

**In their own words...**

"Students are engaged in a wide variety of activities, are provided with choice, are working in different group configurations and are enjoying learning. As testament to this are the student survey results—92% satisfaction up from 65% in the initial year. Students met with greater success in their learning due to greater relevance and meaningfulness. Differentiated instruction made a difference by not only increasing achievement levels among students, but by recognizing and celebrating these achievements".

*Theme 1.3. Differentiated instruction helps students become more self-directed and metacognitive as learners.* Differentiated instruction helped students learn about themselves as learners. Frequent and ongoing monitoring of student readiness, interests, and instructional needs helped students and teachers dialogue about the learning processes. When students and teachers collaborated around learning and students were provided opportunities to self assess and set personal learning goals, they felt empowered as learners within a community of learners. AISI DI projects helped students understand what they were supposed to learn, self-evaluate their progress and articulate their learning strengths, challenges and interests.

**In their own words...**

“Students became advocates for their learning...Students became clearer in their understanding of curricular expectations and of the strategies they needed to employ to improve their learning. We are seeing stronger connections with staff and students. Our attendance rates are up as is satisfaction by both parents and students...”

*Theme 1.4. Technology, when used appropriately, enhances our ability to differentiate instruction and engage students.* Effective use of technology enhanced learning by creating alternate routes to access content and by providing more learning/sharing choices for students and teachers (e.g., learning styles, electronic forums for tiered assignments and assessments). For example, projects that employed videoconferencing reported that this technology extended student learning beyond the school building into other schools in Alberta and into national and international sites. Of interest, the focus group participants noted that the technology approaches have become much more complex over time which creates tension for school districts because staff finds the increasing complexity of technology approaches to help students differentiate instruction problematic. In addition, it was noted that the identification and retention of qualified Information Technology Managers with the skills to keep up to the exponential growth of the technology context is a challenge.

**In their own words...**

“Differentiated instruction, supported by the Web-based learning management system, offers the ability to provide varied and layered assessment tasks to students. The use of an integrated electronic reporting system also facilitates faster reporting turnaround and continuous feedback. Students are finding this access to feedback much better than waiting for assignments to be handed back.”

*Theme 1.5. Differentiated instructional practices enhance our ability to reach all learners.* As reported by AISI projects, strategies used to differentiate learning tasks and assessment activities for special needs groups (e.g., ESL, gifted students, students at risk), were also effective within the general student population across grade levels and curriculum areas. Despite a broad range of target groups, the application of differentiated instruction guided by diagnostic and/or assessment for learning data consistently yielded positive results.

**In their own words...**

“The power of the project was that, even though our focus was the targeted group, the garnered learnings by the teachers were then applied to many other children.”

*Theme 1.6. Students who are more at risk or have higher needs receive more benefits from differentiated (targeted) and intensive support.* AISI projects noted that students at risk or with special learning needs experienced the greatest gains through small group or one-to-one interventions. Differentiation for learners at risk or with higher needs involved responsive instruction that allowed for increased intensity (more instructional time) and explicit instruction of student learning targets. Projects emphasized that a supportive, caring community was very important to the success of struggling learners. For example, ESL students, struggling readers, and students who had not been successful in the past were identified as benefiting from trusting interpersonal relationships with teachers, teaching assistants, counsellors and/or other school professionals. Similarly, collaboration in the development of Individualized Program Plan (IPP) goals, with input from the student, parent, administration, counsellor and subject teachers, facilitated relationship building.

**In their own words...**

“Success can be attributed to one-on-one instruction, carefully selected resources, effective programming and strong tutorial staff; limiting the number of students allowed into the program also made the intervention more achievable. These intervention programs have become very much sought after by teachers and parents.”

## **2. Effective project supports**

*Theme 2.1. Enhanced student learning starts with purposeful, high quality professional development.* Comprehensive and multifaceted professional development, focused on the individual AISI project's goals, was a key determinate to the success of educational innovations. The projects reviewed employed a variety of professional development (PD) program(s) or a blend of site-based collaborative learning activities that included learning communities, coaching, mentoring, study groups, and in-service activities (e.g., workshops and consultants). Of specific interest to this study were projects that noted the importance of site-based support that moved professional learning opportunities into the classrooms through coaching, team teaching and classroom observation. Projects stated that this job

embedded support, provided by site-based experts, was essential to their success in creating a shared culture of DI.

*Theme 2.2. Effective AISI project management supports the efforts of schools in creating differentiated learning environments for teachers and students.* The infrastructure of AISI projects (both in terms of human capital and physical resources) continually evolved across the three year cycle of an AISI project. Many sample projects balanced district level directives with flexibility at the site level. In these cases, schools had the advantage of district provided professional learning support, but the latitude to apply that support in ways that best met the needs of their students and staff. The majority of projects reviewed emphasized the importance of a common language and clear communication (at all levels) around the goals of the initiative, for example between district and schools, between AISI personnel and administrators, between administrators and staff.

Focus group participants defined leadership as fluid and multifaceted throughout the life cycle of an AISI project. For example, AISI lead teacher(s) and coordinators, (i.e. more informal school leadership positions), were identified as holding the critical leadership role(s) in the DI project's success during start up and implementation of the initiative. However, school principals and district level administration, (i.e. more formal leadership positions), were identified as particularly critical to sustaining an AISI project across cycles through their nested role in the budgeting and resource allocation process, and in their role around sustainable education planning and envisioning and supporting change.

**In their own words...**

“Teachers assigned as on-site leads became recognized as part of the leadership teams due to their work across all departments. Some have now moved on to administrative positions... There is a wonderful culture of learning among students and staff as well as a community of trusting relationships and collaborative sharing of best practices and resources.”

*Theme 2.3. Student learning is a collective responsibility that requires clear communication among stakeholders.* The sample of AISI projects under review recognized that learning and pedagogical engagement was the collective responsibility of teachers, parents/guardians, the school/district and the student as an individual. Support was extended by partnerships with community agencies, as needed. In one particular example a steering committee of aboriginal elders from within the community was formed alongside the existing parent council and school leadership team as a means to inform and guide the AISI initiative as it progressed across the cycle. An effective strategy for student success was clear, positive and supportive communication among stakeholders in the students' learning. Meaningful parental involvement, ranging from telephone calls to volunteering for school activities, was an essential part of the educational network desired by many teachers (see Appendix B). This broader reconceptualization of the school community's involvement in innovative educational practices

came about as the various education stakeholders refined their focus (and requisite accountability) on a compelling (and locally significant) site-based research project.

**In their own words...**

“Parents, teachers and students worked together to ensure that each student was accountable for his or her actions and learning. This increased communication between school and home led to increased student productivity and success as well as parent satisfaction.”

*Theme 2.4. Staff expertise, leadership, commitment, and continuity increase the likelihood of AISI project success.* The importance of consistency in staffing cannot be underestimated. The majority of projects in the sample stated that staff turnover and/or lack of staff engagement were barriers to the success of their project(s). The momentum and efficiency of a project were hindered when knowledgeable staff members departed and new staff members were initiated into the culture and practices of the AISI project. Some projects noted that, with persistence and patience, new staff and, in some cases, existing but sceptical staff became AISI project supporters.

**In their own words...**

“New teachers were parachuted into projects without the critical background and knowledge building that had occurred in the first two years of this cycle. One small school, for example, had 11 new staff members in year three.”

*Theme 2.5. Embedding differentiated practices into student learning takes time, even when excellent teacher learning is taking place.* The projects reviewed continued to wrestle with what was articulated as the “implementation gap”. While effective strategies to support differentiation were learned/adopted and their potential benefits appreciated, finding the time and resources to make these an ongoing and integral characteristic of classrooms continued to be a challenge. The specific challenges oriented around time included finding the time to plan and implement instructional strategies, collaborate with colleagues, and gather and synthesize meaning from the research data. One observation also regarded the processes of change as complex and requiring a significant paradigm shift that is often gradual and time-consuming. Projects continued to negotiate the challenges related to determining the types of measures and data needed that would best inform the AISI project as it moved through a site-based research cycle. Data was required to assess project effectiveness, but reporting requirements were articulated as “just one more thing on teachers’ plates”.

**Applied Learning and Knowledge Mobilization: What Really Worked?**

Focus group participants were asked what advice and lessons learned around effective practice they could offer to key decision makers (e.g. teachers, principals, government leaders, faculties of education) engaged in differentiated instruction initiatives. Building leadership capacity by securing and retaining interested

and committed educators and by providing meaningful professional learning opportunities was identified as an essential component to supporting the implementation and advancement of DI projects.

Similarly, engaging in collaborative efforts with one another was seen as facilitating the implementation of consistent practices within and across classrooms and supported the development of resources to help implement differentiated instruction. It was noted that professional dialogue around assessment tools and practices increased throughout the cycle, with a focus on how these tools could be used to inform learning, identify student need, and better assess student progress. Focus group participants also acknowledged the importance of offering student-centred learning opportunities and indicated that providing students with the appropriate level of challenge and support to help them reach learning goals empowered students to take responsibility for their learning. Many projects noted that the implementation of a Web-based learning management system was a change agent for many classroom, school and district practices regarding assessment and differentiation. Adequate resources, in the form of funding, optimal physical environments, materials and technology was seen as critical in providing the opportunity for educators to effectively meet the diverse needs of their students. Finally, the focus group participants underscored the point that understanding and learning to differentiate takes time and training. Mentoring, coaching, team teaching, and team planning provided opportunities for educators to share knowledge and expertise and to grow professionally.

In summary, the reviewed projects incorporated and built on key learnings from previous AISI cycles. All DI projects reviewed reflected a growing use of collaborative professional learning opportunities and lead teacher models or classroom coaching approaches. Many projects mentioned the importance of technology for differentiating instruction and engaging students in learning. Projects also reflected a maturation of the coordination and implementation of AISI funding and AISI project management. Taken together, many of these elements formed the foundation of effective differentiated learning environments.

## DISCUSSION

*Change has a considerable psychological impact on the human mind. To the fearful, it is threatening because it means that things may get worse. To the hopeful, it is encouraging because things may get better. To the confident, it is inspiring because the challenge exists to make things better.*

~ King Whitney Jr.

Change has been characterized as a process (Fullan, 1991) that is dynamic, complex and ongoing (Fullan, 1993). Change is hard work and takes considerable time, consideration, and attention. The provincial research synthesis yielded several lessons related to the impact of implementing

differentiated instruction in high-diversity classrooms. The findings from this review suggest that differentiated instruction clearly has the potential to create environments that maximize learning and the potential for success for *all* students, regardless of skill level or background. Rising to the challenge of school improvement that provides the best learning opportunities for all children across Alberta's Kindergarten to Grade 12 schools requires a recognition that differentiation requires time, professional growth, intentional planning and long-term commitment on the part of educators, school districts, government and wider school communities. Meeting the needs of students from a diverse range of experiential, cultural and ability backgrounds requires collaboration among school professionals, students and families. Collaborative instructional and organizational models, differentiated curricular strategies and student-centred responsive teaching are recommended practices that translate into improved achievement for students.

Despite the diversity and variance of data gathering methods and measures represented by the 25 AISI projects under review for this paper, there was a high degree of consistency of themes and issues. The research team believes it is significant that findings from the analysis of the written AISI project annual reports, and from the data collected during the focus group and telephone interviews, are also confirmed to a large extent by the research literature on school improvement initiatives (see reviews in Hargreaves & Fink, 2006; Hopkins, 1998; Osterman & Kottkamp, 2004) and on Differentiated Instruction (see reviews in Chapman & King, 2005 and Tomlinson, *et al.*, 2003). Such consistency is encouraging, not only in that it points to a high degree of trustworthiness and integrity of the findings, but also because it suggests that there are some common strategies that can, with sustained school improvement efforts and growing wisdom, shape schools into positive teaching and learning environments for all.

As is often the case with exploratory research, new issues have emerged that might be addressed in future research. For example, this research review touched upon considerations as to how leadership is being (re)interpreted both formally and informally, in site-based research projects, as well as what it takes to sustain school improvement projects over time and throughout cultural shifts within a school district. It appears that broadening our interpretation of leadership at different stages of an AISI project's evolution is an essential condition to innovative approaches to school improvement. At times, leadership was found to be in the hands of the students, teacher leaders, and/or AISI coordinators. At other critical stages in the AISI project's life cycle, sustainability, direction and growth came from the more formal leadership positions of principal and/or district level administrator. A shared and distributed notion of leadership that is increasingly pointed to as instrumental to changing school cultures and improving student learning (McRae & Parsons, 2007) was found to be evident in the majority of the AISI projects reviewed in this study.

Finally, improved student learning, as identified by both qualitative and quantitative measures, suggests that Alberta is succeeding in focusing its school improvement efforts on practices and policies that

directly and intentionally impact student learning. Overall, it is clear from our reconciliation of the annual project reports, focus group activity, and contemporary research findings around school improvement (Fullan, 2005; Hargreaves, & Fink, 2006; Hargreaves & Shirley, 2009; Sackney, 2007) that the Alberta Initiative for School Improvement (AISI) is, and has, positively contributed to supporting the learning of thousands of Alberta students, teachers, school communities and education partners. It is our belief that this complex provincial initiative's long-term success lies in the ability of teacher researchers and local school communities to determine their own unique site-based research interests, thus leading to collective action and a multiplicity of empowering, collaborative, innovative, accountable and creative ways to improve student learning.

AISI represents a broad collaborative partnership of education stakeholders (i.e., Faculties of Education, Government, Teachers' Association, School Superintendents, Parent Association, School Board Trustees, and School Board Business Officials); a collective that has committed to achieving a common goal: improved student learning and performance through locally developed and implemented projects that address unique educational needs and circumstances. Other jurisdictions and school authorities can learn from the experiences of this province-wide initiative, as large-scale school improvement initiatives become more prevalent where provinces (states), school districts and schools work toward improving student learning and empowering educators through site-based research projects.

### **ACKNOWLEDGEMENTS**

The authors would like to thank the educators who documented their experiences in the AISI Annual Reports, and those who participated in the focus groups and telephone interviews, for you are the complex voices of AISI as enacted in the Alberta school system. We also gratefully acknowledge Alberta Education, and the School Improvement Branch in particular, of the government of Alberta for provided funding for this research review. Specifically, from within the School Improvement Branch we thank Dr. Dianna Millard and Dr. Alfred Sakyi for their ongoing support and interest in this project. We also acknowledge our research assistant, Holly Stack-Cutler, for her contribution to data gathering and analysis throughout this endeavour.

## Authors' notes

- 1 An effect size expresses the increase or decrease in standard deviation.
- 2 Effect size calculation: All data on student learning, both baseline and results, were converted to a common scale (e.g., standard score) that permits comparison of improvement, regardless of the type of measure school authorities used. An effect size of 1.0 indicates an increase of one standard deviation, typically associated with advancing children's achievement by one year, improving the rate of learning by 50% or a correlation between some variable and achievement of approximately 0.50 (Hattie, 1992, pp. 5-6).

## References

- Alberta Education. (2009). *Inspiring education: A dialogue with Albertans*. Edmonton, AB: Alberta Education. Retrieved on May 21, 2009 from <http://www.inspiringeducation.alberta.ca/>
- Alberta Education. (2008). *AISI Cycle 4 Handbook (2009-2012)*. Edmonton, AB: Alberta Education. Retrieved on June 4, 2009 from <http://education.alberta.ca/admin/aisi/about/gandp.aspx>
- Alberta Education. (2007). *Improving student learning: Summary report for Cycle 2 (2003-2006)*. Edmonton, AB: Alberta Education. Retrieved on April 15, 2008 from <http://education.alberta.ca/aisi>
- Alberta Education (2003). Alberta's Commission on Learning. Every child learns, every child succeeds: Report and recommendations. Available on line at <http://education.alberta.ca/media/413413/commissionreport.pdf>
- Chapman, C., & King, R. (2005). 11 Practical ways to guide teachers toward differentiation (and an evaluation tool). *Journal of Staff Development*, 26 (4), 20-25.
- Dodge, J. (2005). *Differentiation in action: Grades 4 & up*. New York, NY: Scholastic.
- Drapeau, P. (2004). *Differentiated instruction: Making it work*. New York, NY: Scholastic.
- Fullan, M. (1991). *The new meaning of educational change*. New York: Teachers College Press.
- Fullan, M. (1993). *Change forces: Probing the depths of educational reform*. Bristol, PA: Falmer Press.
- Fullan, M. (2005). *Leadership and sustainability: Systems thinkers in action* Thousand Oaks, CA: Corwin.
- Hall, T. (2002). *Differentiated instruction*. Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved March 19, 2007 from [http://www.cast.org/publications/ncac/ncac\\_diffinstruc.html](http://www.cast.org/publications/ncac/ncac_diffinstruc.html)
- Hargreaves, A. & Fink, D. (2006). *Sustainable leadership*. San Francisco, CA: Jossey-Bass.
- Hargreaves, A. & Shirley, D. (2009). *The fourth way: The inspiring future for educational change*. Thousand Oaks, CA: Corwin Press
- Hattie, J. (1992). Measuring the effects of schooling. *Australian Journal of Education*, 36, 5-13.
- Heacox, D. (2002). *Differentiating instruction in the regular classroom: How to reach and teach all learners*. Minneapolis, MN: Free Spirit Publishing.
- Hopkins, D. (1998). Tensions in and prospects for school improvement. In A. Hargreaves, A. Lieberman, M. Fullan & D. Hopkins (Eds.). *International Handbook of Education Change*. Dordrecht, NL: Kluwer Academic Publishers, pp. 1035-1055.
- McRae P. (2009, March). *The importance of diversity in a complex education system*. Keynote address for the annual College of Alberta School Superintendents (CASS) and Alberta Education (AE) Curriculum Conference, Red Deer, AB.
- McRae, P., & Parsons, J. (2007). *Systemic school improvement: Key findings from six years with the Alberta initiative for school improvement*. Canadian Society for Studies in Education (CSSE). Research roundtable with CATE; Saskatoon, SK.
- Osterman, K. F., & Kottkamp, R.B. (2004). *Reflective practice for educators: Professional development to improve student learning* (2<sup>nd</sup> Ed.). Thousand Oaks, CA: Corwin.
- Patton, M. (1990). *Qualitative evaluation and research methods*. Newbury Park: Sage Publishing

Sackney, L. (2007). History of the school effectiveness and improvement movement in Canada over the past 25 years. In T. Townsend (Ed.), *Handbook of school effectiveness and improvement*. Dordrecht, The Netherlands: Springer.

Tomlinson, C.A. (2001). *How to Differentiate Instruction in Mixed Ability Classrooms* (2<sup>nd</sup> Edition). Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C.A., & Allan, S. D. (2000). *Leadership for differentiating schools and classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development

Tomlinson, C., Brighton, C., Hartberg, H., Callahan, C., Moon, T., Brimijoin, K, Conover, L, & Reynolds, T. (2003). Differentiating Instruction in response to student readiness, interest and learning profile in academically diverse classrooms: A review of literature. *Journal for the education of the gifted*, 27, 23, 119-145.

Tomlinson, C.A. and McTighe, J. (2006). *Integrating Differentiated Instruction and Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development.

..... Appendix A: Differentiated Instruction Activities .....

Figure 2 illustrates the DI strategies most often used in AISI projects, according to focus group participant responses. Note that the titles for instructional strategies listed below were drawn directly from AISI annual reports and reflect the terminology used within project descriptions.

Figure 2. DI Instructional Strategies

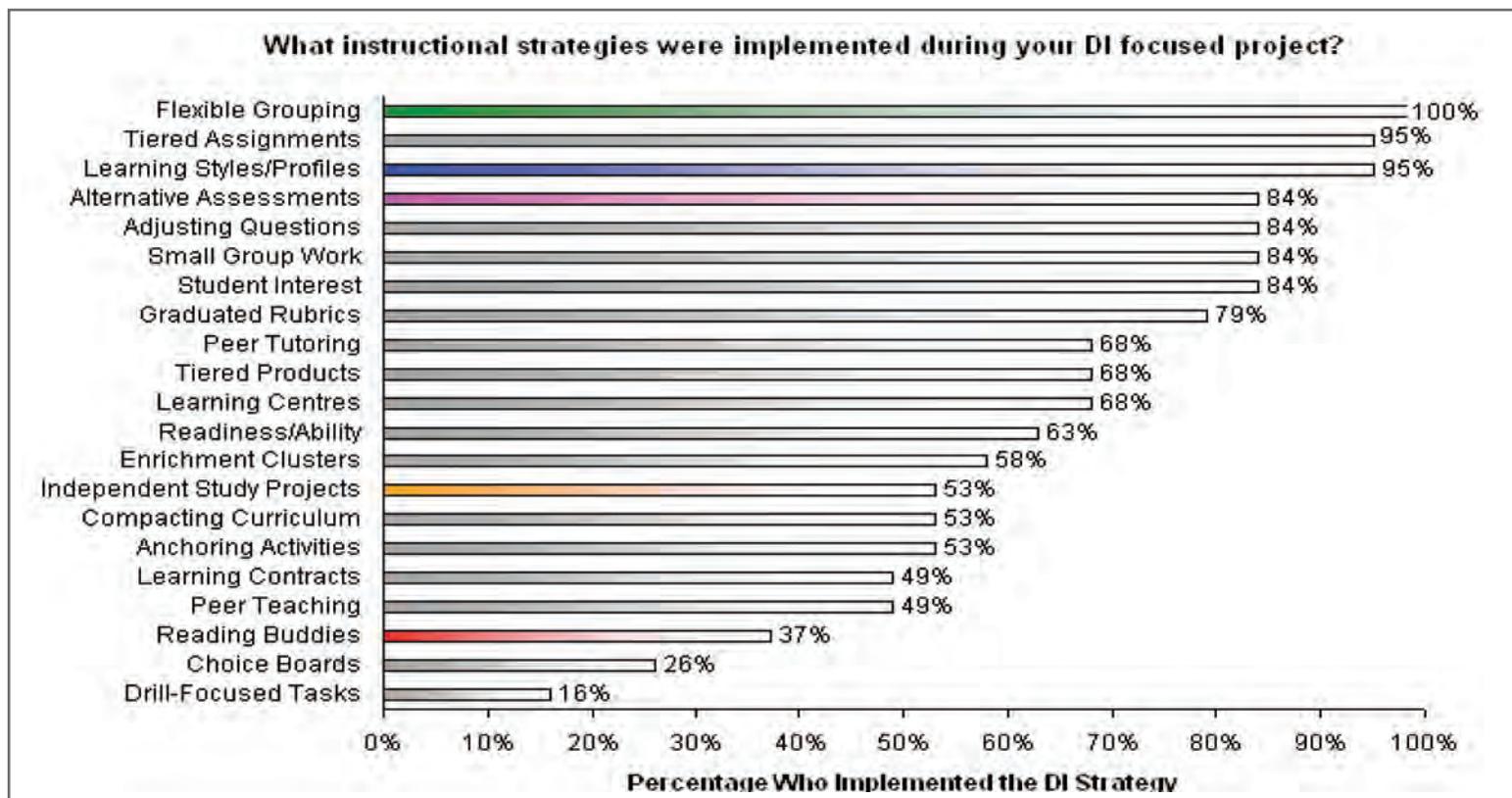
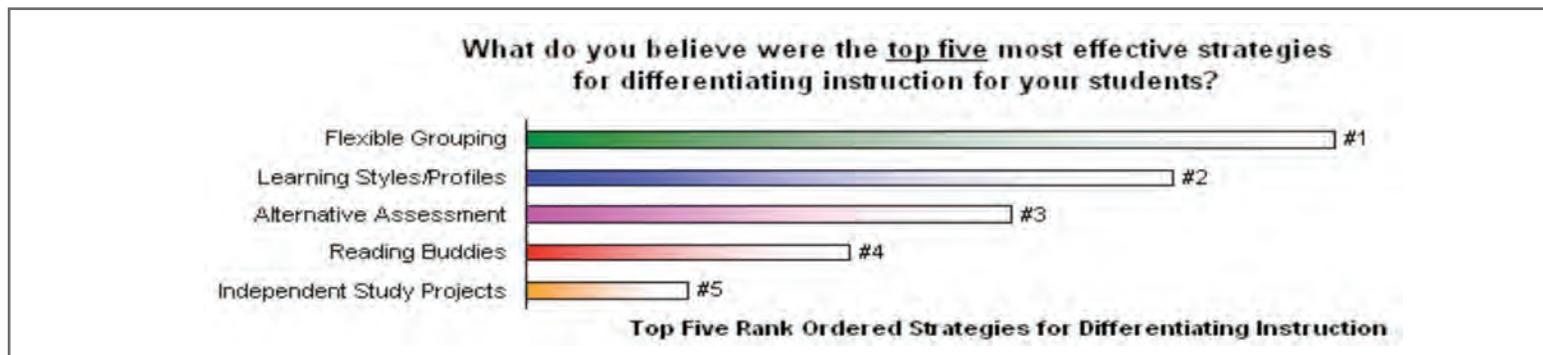


Figure 3. Top Five Strategies for Differentiating Instruction



The majority of participants identified flexible grouping as the most effective strategy used. Learning styles was cited as the next most effective strategy, followed by alternative assessments. Interestingly, reading buddies was identified as the fourth most effective DI strategy, yet only 37% of the AISI projects reviewed employed this approach.

..... Appendix B: Strategies for Parental Involvement .....

During the focus group, participants were asked which strategies they implemented in an attempt to further involve parents in their AISI DI project(s). The following graphs illustrate participant responses (Figure 4 and Figure 5).

Figure 4. Strategies Supporting Parental Involvement

Figure 4

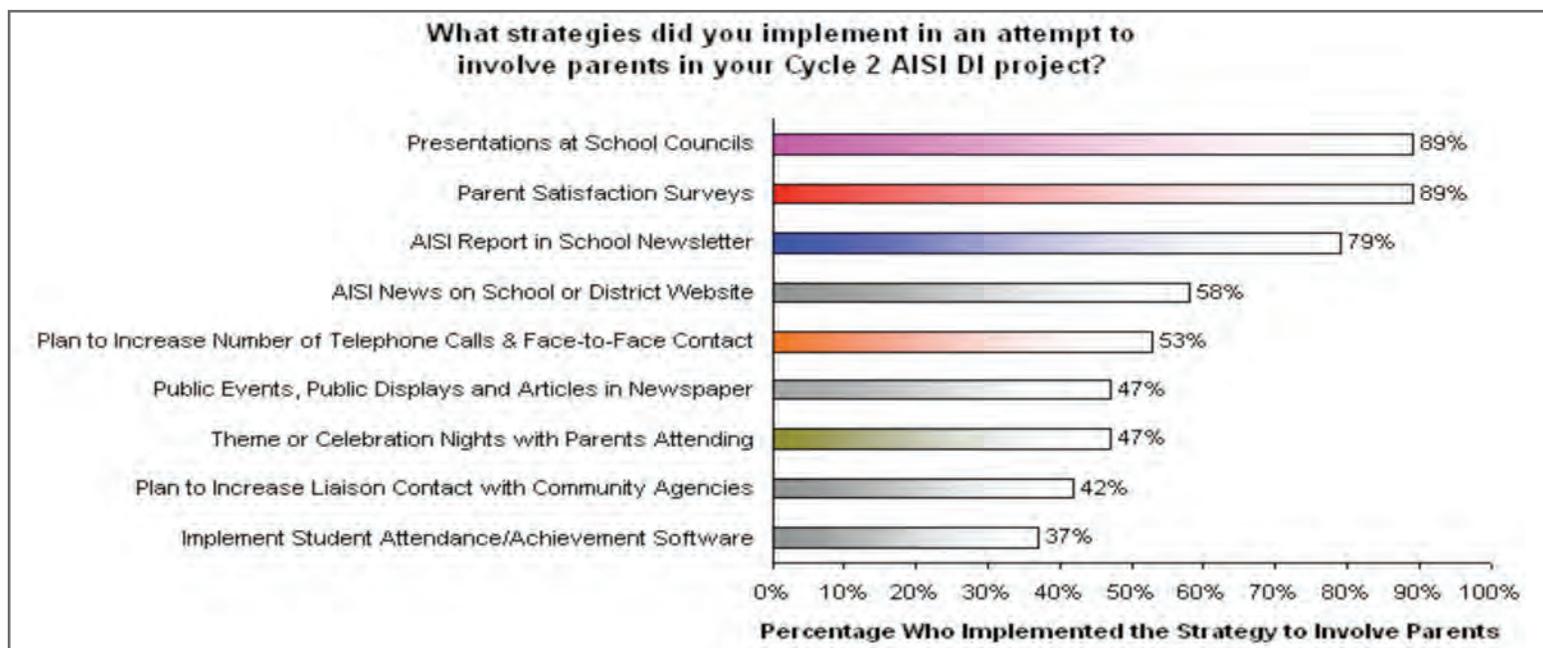
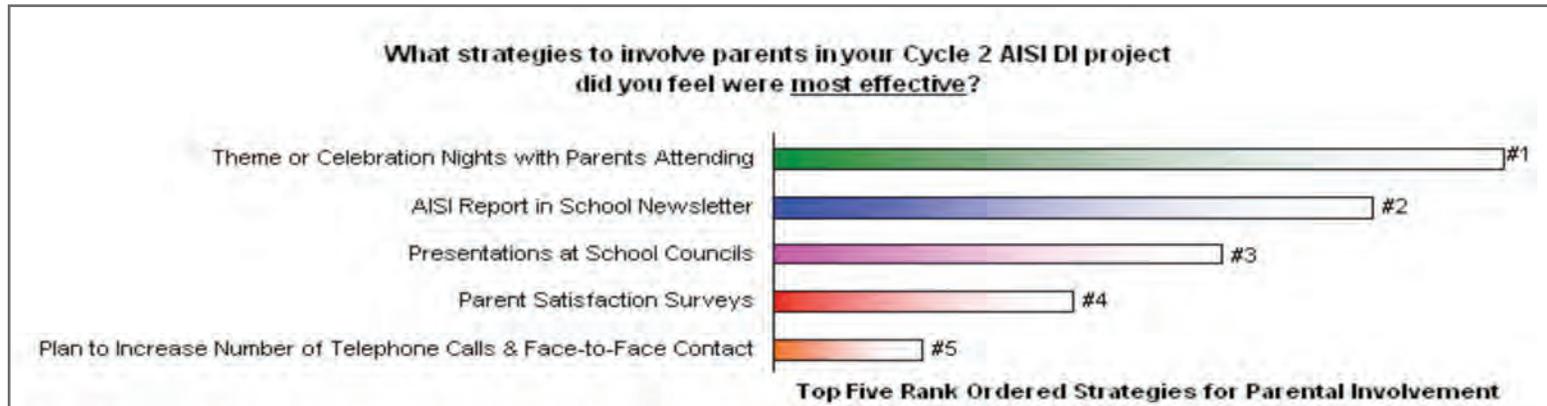


Figure 5. Effective Strategies for Parental Involvement



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..... How to cite this article .....

McQuarrie, L. M. & McRae, P. (2010). A provincial perspective on differentiated instruction: The Alberta Initiative for School Improvement (AISI). *Journal of Applied Research on Learning*, 3, Article 4, pp. 1-18.