

Alberta Initiative for School Improvement (AISI)

Differentiated Instruction Provincial Research Review

Choice, Complexity and Creativity

choice complexity
creativity heart
individual kids learn
learners learning personalized
preparation student students success
teaching technology variety



University of Alberta

Research Findings from AISI Cycle 2 (2003–2006)

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Differentiated Instruction
Provincial Research Review

Findings from Cycle 2 (2003 – 2006)

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Foreword

This research review was 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. Although direction was given to the research team to establish parameters for the task, the content of this document reflects the research team’s perspectives on topics and subjects reviewed and does not necessarily reflect the position of Alberta Education.

We are pleased to recognize the research team of Dr. Lynn McQuarrie, Dr. Philip McRae and Ms. Holly Stack-Cutler for its work conducting this specific research review of AISI projects, with a focus on differentiated instruction to improve student learning.

The cover art on this research review visually represents the focus group participants’ conceptualization, in a word or phrase, of what it means to differentiate instruction. This data visualization is presented in the form of a text cloud, where the larger the size of the word, the more it was used by focus group participants.

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EXECUTIVE SUMMARY

In their own Words...

Each learner entrusted to our care has unique gifts and abilities. It is our mission to find out what these are...to explore them, develop them and celebrate them.

INTRODUCTION

This research review focuses on Alberta Initiative for School Improvement (AIS) projects carried out between 2003 and 2006 (AIS Cycle 2) that had a primary focus on effective practices in differentiated instruction. In these projects, differentiated instruction (DI) is characterized as a way of thinking about and approaching the planning and implementation of curriculum and instruction that recognizes and accommodates diversity in student learning needs so that students benefit more fully from instruction. The AIS projects reviewed reflect a complex and varied blend of teaching strategies, assessment practices and professional development activities as well as the supportive behaviours of administrators, teachers, parents and district office staff.

Differentiated instruction has the potential to create learning environments that maximize learning and the potential for success for ALL students—regardless of skill level or background. Rising to the challenge of providing the best learning opportunities for all children across Alberta's 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. It is anticipated that Cycle 3 of AIS (2006–2009) has built on this commitment and on the successes and lessons learned from AIS work to date.

STUDY BACKGROUND

This research review was conducted to provide information that would inform Alberta Kindergarten to Grade 12 school jurisdictions and Alberta Education in their future efforts to enhance and support differentiated instruction to improve student learning. It shares the results of a study conducted by a research team from the Faculty of Education at the University of Alberta. This particular study reviewed 25 Alberta Initiative for School Improvement (AIS) projects that had a positive impact on student learning¹, demonstrated promising practices and sought school improvement through differentiated instructional practices. Several other AIS university partner provincial research reviews, from Cycle 1 and Cycle 2, can be accessed via the AIS Web site; e.g., language arts/literacy, mathematics/numeracy, collaborative professional development, learning and technology.

STUDY DATA

Three sources of data were analyzed for this report:

- ☞ annual reports from 25 successful projects (Appendix Three) from Cycle 2 (2003–2006)
- ☞ findings from a focus group of representatives from 18 schools and districts drawn from the above-noted sample
- ☞ findings from telephone interviews with schools and districts that did not attend the focus group.

Quotations found in this report, under the sections entitled “In their own Words...,” have been drawn directly from the leads in reviewed AIS projects and are put forward in a verbatim fashion.

¹ See Appendix Three for a detailed Research Methodology and Effect Size Calculation.

EXECUTIVE SUMMARY

KEY FINDINGS IDENTIFIED

For the purposes of this report, the findings and emerging themes of the research have been structured into two broad categories. The key findings below are not ranked in order.

- 1. Effective pedagogies and learning supports:** These themes pertain specifically to instructional practices that had a direct impact on students' learning experiences.
- 2. Effective project supports:** These themes pertain to the infrastructures and professional development practices that were required for pedagogical approaches and learning supports to be implemented effectively.

1. EFFECTIVE PEDAGOGIES AND LEARNING SUPPORTS

Finding 1.1 Effective differentiation begins with and is shaped by ongoing assessment for learning activities.

Finding 1.2 Differentiated instruction enhances student self-confidence and engagement.

Finding 1.3 Differentiated instruction helps students become more self-directed and metacognitive as learners.

Finding 1.4 Technology, when used appropriately, enhances our ability to differentiate instruction and engage students.

Finding 1.5 Differentiated instructional practices enhance our ability to reach all learners.

Finding 1.6 Students who are more at risk or have higher needs receive more benefits from differentiated (targeted) and intensive support.

2. EFFECTIVE PROJECT SUPPORTS

Finding 2.1 Enhanced student learning starts with purposeful, high quality professional development.

Finding 2.2 Effective AISI project management supports the efforts of schools in creating differentiated learning environments for teachers and students.

Finding 2.3 Student learning is a collective responsibility that requires clear communication among stakeholders.

Finding 2.4 Staff expertise, leadership, commitment and continuity increase the likelihood of AISI project success.

Finding 2.5 Embedding differentiated practices into student learning takes time, even when excellent teacher learning is taking place.

INTRODUCTION

CONTEXT OF AISI PROJECTS

The Alberta Initiative for School Improvement (AISI), developed through a collaborative partnership in 1999, was implemented in Alberta school authorities in the 2000–2001 school year. Partners include the Alberta Home and School Councils' Association, Alberta School Boards' Association, Association of School Business Officials of Alberta, Alberta Teachers' Association, College of Alberta School Superintendents, Alberta Education, Campus Saint-Jean, University of Alberta, University of Calgary and University of Lethbridge.

BACKGROUND AND SCOPE OF AISI

The goal of AISI is to improve student learning and performance by supporting initiatives that address unique needs and circumstances within school authorities. AISI funding is targeted, which means it is provided to school authorities for specific local initiatives that focus on improving student learning. This funding is in addition to basic instruction funding. All provincially funded school authorities in Alberta participated in Cycle 1 and Cycle 2 of AISI, including 77 public school authorities (e.g., public, separate and Francophone districts, charter schools) and 231 private school authorities (e.g., 115 private schools, 116 ECS private operators). Over 800 AISI projects were developed and implemented during the first cycle (2000–2003) and approximately 460 projects were approved for the second cycle of AISI (2003–2006), which began September 2003.

Cycle 1 of AISI established a foundation of trust between government and education stakeholders and created a model for collaboration that has been employed in other government initiatives. It established accountability measures and criteria to provide evidence that the initiative works and set the stage for continuous improvement. Cycle 2 of AISI consolidated emerging knowledge and synthesized what works. It built on the enthusiasm and commitment from Cycle 1 and expanded AISI's sphere of influence to more Alberta teachers and students. During Cycle 2, there was greater focus on collecting the right data, in-depth analysis of promising practices and further dissemination of findings, all of which are fundamental to the future success of AISI.

AISI, currently in Cycle 3 (2006–2009) with about 400 approved projects, continues to build on the accomplishments of the first two cycles. Characterized by collaborative inquiry, it emphasizes innovation and research, extends what has been learned through in-depth analysis of project outcomes, enhances professional practice, focuses on professional development and expands knowledge sharing and dissemination.

PURPOSE OF THE REPORT

The purpose of this report is to gather and synthesize findings from AISI projects that made successful use of differentiated instruction strategies and to identify effective and promising practices that school authorities can use to improve student learning in Kindergarten to Grade 12 environments. This report also fulfils one of the mandates of the Faculty of Education at the University of Alberta to work with learning system stakeholders to share, integrate and sustain successes and effective practices from AISI projects in its role as an AISI university partner.

REPORT LIMITATIONS

Although data was triangulated and the findings of this report were consistently validated, researchers recognize the limitations of this work. The work's exploratory nature lent itself to a qualitative approach; thus, findings are descriptive rather than predictive in nature. Findings provide insight into the wide range of opinions held by study participants, not a population at large, and, while these findings are helpful for setting general directions or goals, specific details provided may not be applicable in other contexts or offer specific predictive value.

Overview of Differentiated Instruction Projects Under Review

This research review focuses on Alberta Initiative for School Improvement (AIS I) projects that share the underlying philosophy that schools' efforts should support the whole child and that academic success is impacted by a student's affective experiences of school. Within these projects, students are recognized as individuals who bring unique strengths, challenges, learning preferences and interests to the learning process. AIS I projects reviewed had worked through a three-year action research cycle to educate the whole child. This was attempted by:

- using varied pedagogies and a differentiated instruction approach to respond to a diverse range of student abilities, interests and needs
- building safe and supportive relationships and learning environments—especially for students at risk
- recognizing and accommodating the learning needs of gifted students, ESL students and students at risk.

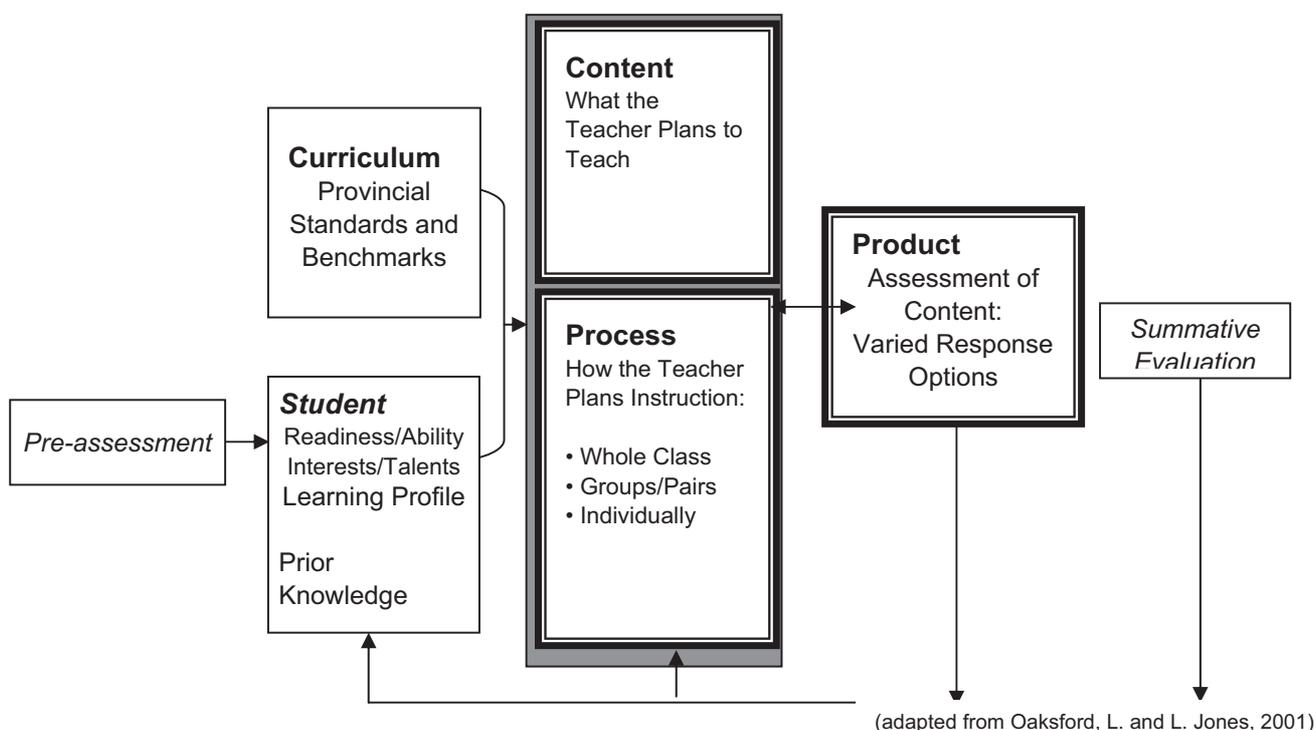
Projects shared a general approach to student learning, rather than a specific set of pedagogical practices. As a result, effectiveness cannot be delimited to what happened in the classroom(s). These projects reflect a complex and varied blend of responsive teaching strategies, assessment practices and professional development activities as well as the supportive behaviours of administrators, parents and district offices. In keeping with this reality, this report 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 support implementation.

The reviewed projects incorporated and built on key learnings from previous AIS I cycles, many of which have been shared in existing AIS I provincial research reviews as key findings. For example, all DI projects reviewed reflected a growing use of collaborative professional development 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 AIS I funding and AIS I project management. Taken together, many of these elements formed the foundation of effective differentiated learning environments.

DEFINITIONS OF TERMS USED

Differentiated instruction (DI) is 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. To differentiate instruction requires intentional planning to make the curriculum, instruction and learning environment meaningful and appropriate for each student. In the AISI Cycle 2 projects reviewed, differentiated classrooms recognized and accommodated diversity in student learning needs by offering multiple avenues and options for students to access curricular content, make sense of concepts and skills, and demonstrate learning. Figure 1 illustrates learning cycle and decision factors that may be used to plan and implement differentiated instruction to improve student learning.

Figure 1
Learning Cycle and Decision Factors Used to Plan and Implement Differentiated Instruction²



²Source: CAST Universal Design for Learning. Available online at: http://www.cast.org/publications/ncac/ncac_diffinstruc.html.

DESCRIPTION OF PROJECTS REVIEWED

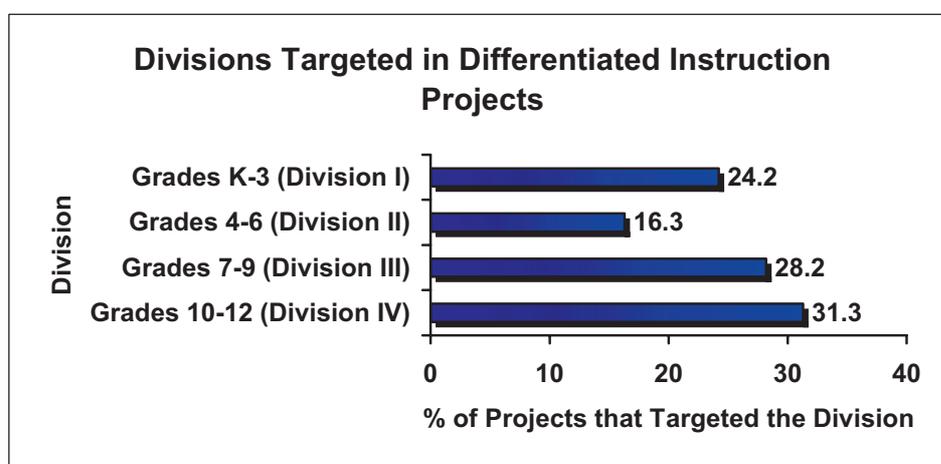
I. Scope of Projects

Differentiated instruction initiatives reviewed for this report involved over 70 000 students in a variety of settings and contexts.

Of the 25 studies reviewed,

- ☞ 5 (five) projects focused on a single site school
- ☞ 8 (eight) projects focused on multiple sites, based on targeted grade divisions; e.g., junior high school students
- ☞ 12 (twelve) projects targeted all schools in the district.

Target populations in the projects reviewed favoured senior high school settings (Division IV).



II. Project Foci

The projects reviewed used a variety of curriculum and instructional strategies to respond to student diversity and differences in learning needs. In all projects, differentiation of curriculum and instruction was a data driven process, based on assessment of students' readiness levels, interests, abilities and learning styles.

Providing access and interaction with curricular content in numerous ways and in multiple dimensions required thoughtful and intentional planning. An emphasis on collaboration among school professionals as well as meaningful professional development and mentoring helped educators implement integrative curricular strategies and differentiated practices effectively within their classrooms.

The majority (64%) of projects reviewed focused differentiation efforts around all students in inclusive classroom environments. Other projects targeted differentiated instruction and learning initiatives for specific groups of learners, including:

- special education students
- English language learners
- highly able/gifted learners
- students considered at risk for leaving school before completion and disengaged learners

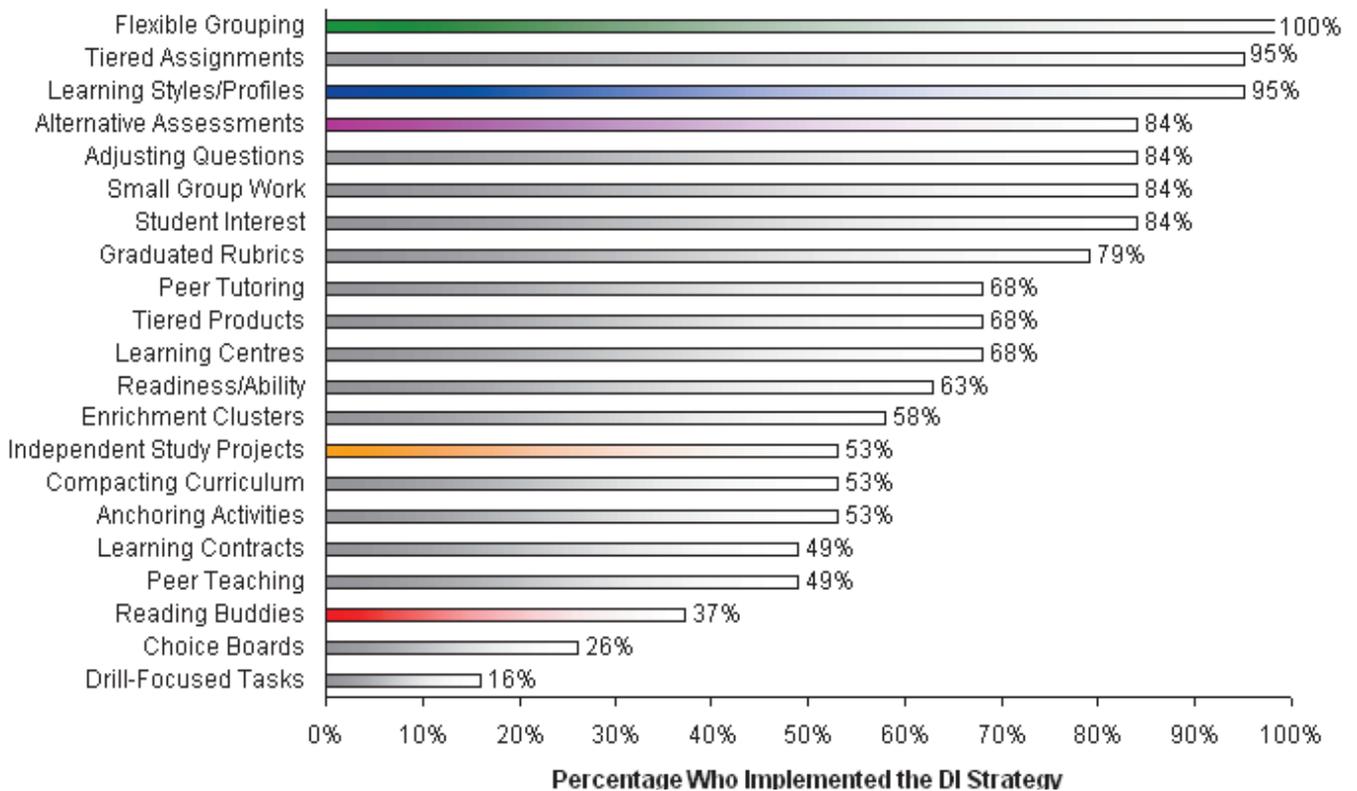
Key Foci of AISI Projects that Implemented Differentiated Instruction

- Increase self-competence, self-esteem and self-concept by offering choices for learning at the appropriate level of challenge.
- Develop common and consistent assessment practices to match students with learning tasks compatible with their learning strengths and needs; e.g., readiness, interests, learning profiles.
- Make students and teachers collaborators in learning—flexibility and thoughtful planning contribute to individual success.
- Integrate technology through courseware, media materials and digital learning environments.
- Engage students in understanding their learning strengths, setting learning goals and participating in decision making about their learning.
- Enhance core curriculum and student skills in reading and writing strategies, vocabulary development and numeracy.
- Build community by providing support models for students in the form of peer mentoring, student learning centres and staff learning supports.
- Build capacity by providing support models for teachers in the form of peer mentoring, coaching, team planning and professional development.

III. Differentiated Instruction Activities

The following graph illustrates the DI strategies most often used in AISI projects, according to focus group participant responses.³ Note that the titles for instructional strategies listed below were drawn directly from AISI annual reports and reflect the terminology used within project descriptions.

What instructional strategies were implemented during your DI focused project?



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.

What do you believe were the top five most effective strategies for differentiating instruction for your students?



³ The sample included 19 participants from the focus group and telephone interviews. Questions used to gather this information can be found in Appendix Four: Focus Group and Telephone Interviews.

KEY FINDINGS FROM CYCLE 2 AISI DIFFERENTIATED INSTRUCTION PROJECTS

A number of key findings, themes, strategies and concerns resonated across the projects reviewed in this sample. These findings were identified through analysis of the projects' annual reports and further elaborated upon in a focus group conversation and through telephone interviews. The key findings below are not ranked in order.

KEY FINDINGS

1. EFFECTIVE PEDAGOGIES AND LEARNING SUPPORTS

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. Developing challenging and engaging learning tasks for each learner was based on student assessment data.

- ☞ Pre-assessment data helped teachers plan and adjust learning tasks for students who were behind or who demonstrated they already knew the content being covered.
- ☞ 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.

Schools started discussing assessment strategies and recognized the value of having common and consistent practices in assessment.

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.

- ☞ Projects reported that when students were provided with choices in their learning and more balance between teacher assigned and student selected learning tasks, they enjoyed learning more.
- ☞ 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.

Students have become more active learners, looking for ways to learn about topics for which they are passionate. There has also been an increased willingness to approach problems and tasks that are seen as challenging.

1.3 Differentiated instruction helps students become more self-directed and metacognitive as learners.

Differentiated instruction helped students learn about themselves as learners. Assessment 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.

- ☞ Good formative assessment played a strong role in students' learning to learn and provided teachers and students with shared understandings about learning objectives.
- ☞ Successful differentiated instruction projects helped students understand what they are supposed to learn, self-evaluate their progress and articulate their learning strengths, challenges and interests.
- ☞ Learning to track academic progress helped students recognize how far their learning had come and determine the direction they needed to move to continue advancement.

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...

Students were equipped with strategies that worked specifically for their learning modality and multiple intelligences...Active learning strategies that were reinforced throughout the school meant consistent language and consistent use of effective, brain-based, learning strategies...Students needed to have strategies modelled, followed by guided practice before they use[d] them independently.

We find that our students are capable and willing to assess their learning on an ongoing basis, while specific teacher feedback is frequently given to help students improve the quality of their work. As a result, students are mindful of how they learn, understand the benefit of setting personal learning goals, regularly self-assess and adjust their performance and use productive strategies to assist their learning.

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.

- ☞ Learning management systems, e.g., Moodle, improved communication between students, teachers and parents. They were used to upload/download notes and assignments, access online student self-assessments and provide key notes prior to class.
- ☞ Equitable and reliable student access to technology resources at the school site was problematic.

- The Galileo Educational Network Association (GENA) was identified as a learning partner that strongly supported projects with an inquiry stance towards differentiated learning.
- Technology and software applications that provide student choice in assignments and learning assessments empowered students.
- Specialized software that supports learning for delayed readers was highly effective.
- Videoconferencing extended student learning beyond the school building into other schools in Alberta and into national and international sites.
- The focus group noted that the technology approaches used in the AISI DI projects had become much more complex over time, especially during Cycle 3. This was identified as a tension for school districts because staff find the increasing complexity of technology approaches to help students differentiate instruction problematic and because 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.

[P]arental involvement impacted student learning positively because the increased communication through Web-based sharing of student progress helped parents motivate their children.

The integration of technology tools led to increased collaboration amongst teachers to develop and critique learning resources.

Student assessment has changed dramatically with the use of courseware. Teachers are using digital feedback with assignments that are uploaded with the courseware. Students are finding this access to feedback much better than waiting for assignments to be handed back.

1.5 Differentiated instructional practices enhance our ability to reach all learners.

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, e.g., all grades, multiple subject areas, ESL, students at risk, gifted students, general student populations, the application of differentiated instruction guided by diagnostic and/or assessment for learning data consistently yielded positive results.
- Some projects noted a spillover effect; gains in one subject area had positive impacts across the curriculum or all students (not just the target group) benefited from differentiation strategies.

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.

We expected to see improvement in language arts scores but we also saw substantial improvement in other subject areas. Teachers took what they learned about differentiation and applied it in other subject areas as well.

1.6 Students who are more at risk or have higher needs receive more benefits from differentiated (targeted) and intensive support.

Successful 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. ESL students, struggling readers and students who had not been successful in the past seemed to need—and benefit from—trusting interpersonal relationships with teachers, teaching assistants, counsellors and/or other school professionals.

- ☞ In some projects, teaching assistants (TA) were used more strategically to provide specific forms of support for learners at risk. However, questions around whether TAs had the necessary skill sets to effectively manage the complexity of instructional needs were raised.
- ☞ Teaching students at risk to advocate for themselves was deemed important.
- ☞ Projects emphasized that a supportive, caring community was very important to the success of struggling learners. 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.
- ☞ Early intervention and targeted instruction were significant themes for students at risk and students with higher needs.

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.

Through the implementation of projects like this AISI program, individual needs of identified students never got forgotten and the specific requirements of reluctant learners were always addressed.

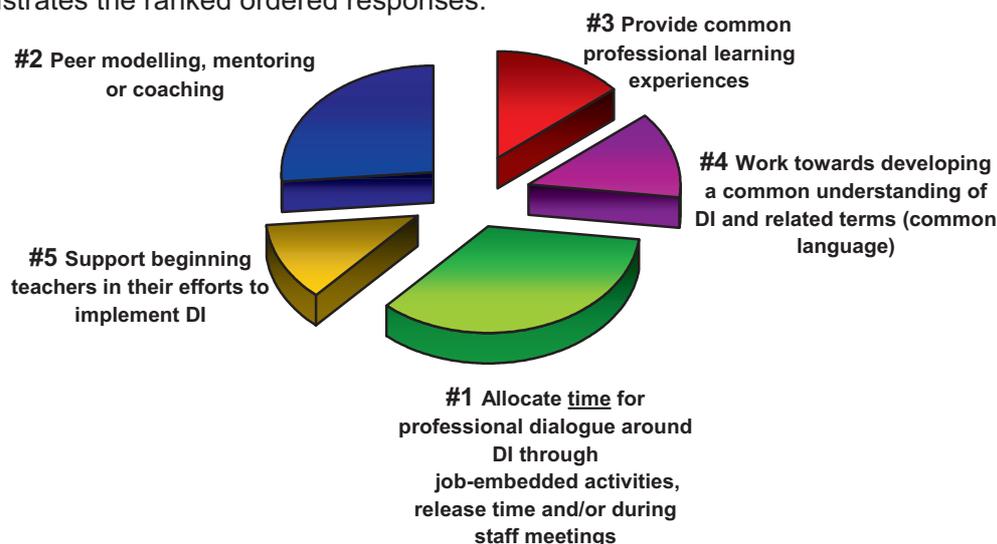
KEY FINDINGS

2. EFFECTIVE PROJECT SUPPORTS

2.1 *Enhanced student learning starts with purposeful, high quality professional development.*

Comprehensive and multifaceted professional development, focused on project goals, was a key determinate to the success of AISI projects. The projects reviewed used a program of multiple and coordinated professional development activities and events to move toward project goals. All projects used a combined Professional Development (PD) program or a blend of site-based collaborative learning activities, including learning communities, coaching, mentoring and study groups, and in-service activities, such as workshops and consultants.

- ☞ All of the projects stated that teacher-to-teacher collaboration was a critical factor.
- ☞ Many projects mentioned the importance of site-based support that moved professional development 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.
- ☞ During the focus group, participants⁴ were asked to put forward their suggestions on how to best assist teachers with professional growth around DI. The following graph illustrates the ranked ordered responses:



In their own Words...

Building capacity in the use of best practices has occurred in project schools through the leadership of on-site mentoring. Teachers are realizing the value and expertise within their own building—true capacity building—they are more willing to take risks, open classroom doors and revisit and reflect on practice with colleagues.

The project implemented a comprehensive and aligned professional development matrix over the three years.

The lead teacher model helps teachers see what new practices will look like and gives them hope that it can actually work within the context of the classroom. This kind of embedded support also reduces the amount of time teachers are out of their classrooms, which has been important for our teachers.

⁴ The sample included 19 participants from the focus group and telephone interviews. The question used to gather this information can be found in Appendix Four: Focus Group and Telephone Interviews.

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 continued to evolve. Many sample projects balanced district level directives with flexibility at the site level. In these cases, schools had the advantage of district provided professional development 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; e.g., between district and schools, between AISI personnel and administrators, between administrators and staff.
- ☞ It was noted that a shared language represented an ongoing shift towards a shared culture around differentiation. This was, in turn, identified as a useful qualitative measure of the cultural changes occurring in the school/district.
- ☞ Many projects praised the enthusiasm and leadership of site-based AISI coordinators and lead teachers as champions of the initiative.
- ☞ In the focus group, leadership was defined 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 critical to sustaining an AISI project across cycles through budgeting and resource allocations, shared visioning and sustainable education planning.

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.

Administration and coordination makes sure that the time for teachers and students, resources and PD are all offered and scheduled.

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.

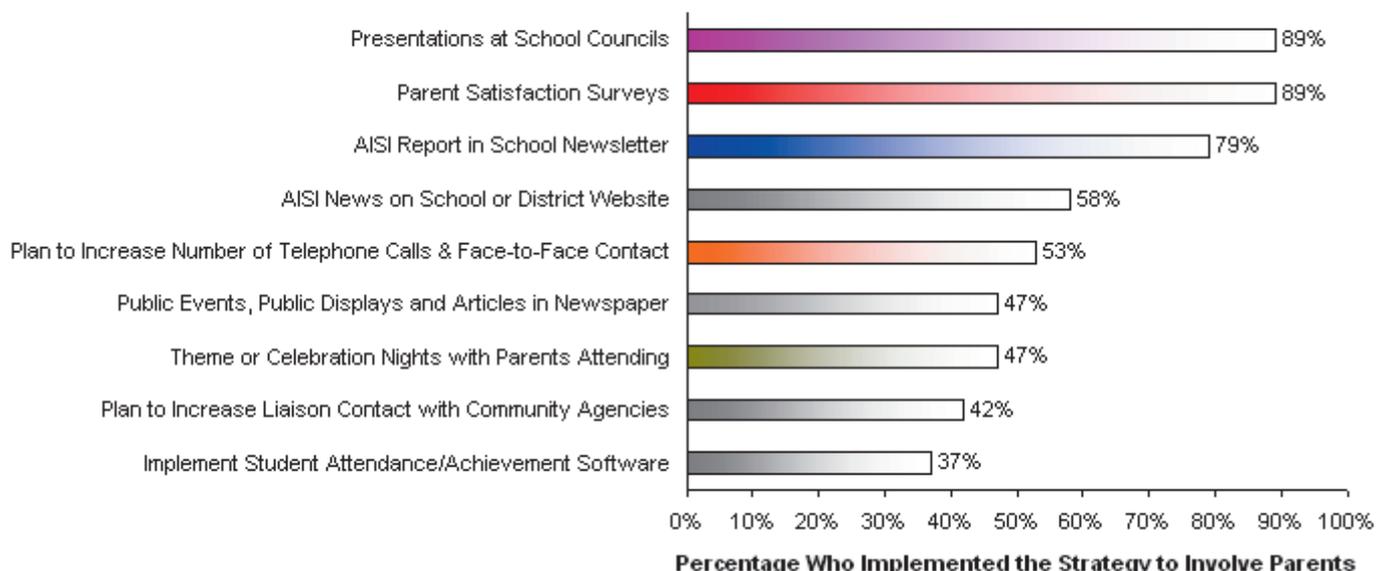
2.3 Student learning is a collective responsibility that requires clear communication among stakeholders.

The sample of AISI projects under review recognized that learning 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. An effective strategy for student success was clear, positive and supportive communication among stakeholders in the students' learning.

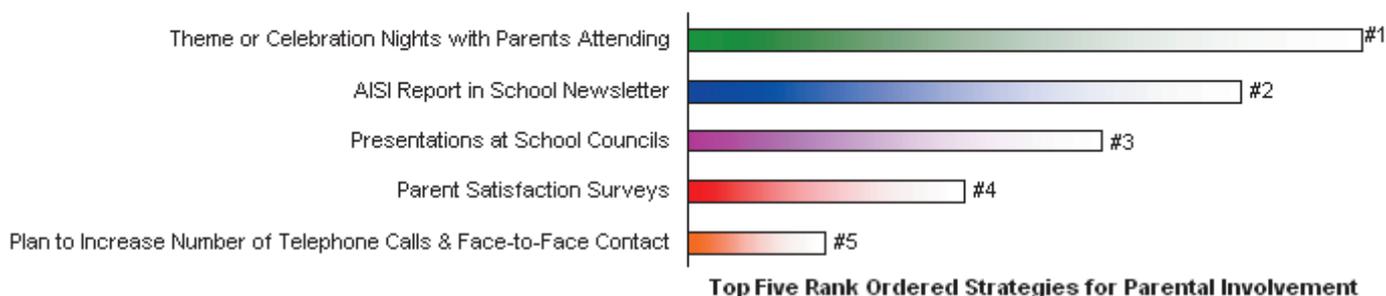
- ☞ Team approaches to student intervention, such as classroom teachers and support personnel at the site level, were effective.
- ☞ Projects targeting students with higher needs recognized the importance of obtaining parental support. However, many projects noted that parental communication was considered an ongoing challenge.
- ☞ Learning opportunities for parents were provided with the rationale that parents would be better equipped and empowered to support their children's learning at home.
- ☞ Parental communication was enhanced through course management and gradebook software.
- ☞ Meaningful parental involvement, ranging from telephone calls to volunteering for school activities, was an essential part of the educational network desired by many teachers.

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

What strategies did you implement in an attempt to involve parents in your Cycle 2 AISI DI project?



What strategies to involve parents in your Cycle 2 AISI DI project did you feel were most effective?



In their own Words...

We were able to plan together in grade level teams and sketch out the learning tasks and where we differentiate for a variety of learners. It is this kind of in-depth work that translates into improved achievement for students.

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.

⁵ The sample included 19 participants from the focus group and telephone interviews. The question used to gather this information can be found in Appendix Four: Focus Group and Telephone Interviews.

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.

- ☞ A number of projects supported newcomers to the AISI work with some form of mentorship while others offered repeats of key workshops over consecutive years to bring project newcomers up to speed.
- ☞ Some projects noted that, with persistence and patience, new staff and, in some cases, existing but skeptical 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.

Teachers across our district learned that a one size fits all model cannot work in today's classroom. Students come to their classes with different interests, levels of readiness and learning styles. To use one strategy to meet the needs of such a diverse student population no longer works.

2.5 Embedding differentiated practices into student learning takes time, even when excellent teacher learning is taking place.

Many projects 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.

- ☞ Teachers reported being overwhelmed by the interventions they were asked to try and by the reporting and accountability expectations associated with the project.
- ☞ Projects continued to negotiate the challenges of gathering data from teachers. Data was required to assess project effectiveness, but reporting requirements were articulated as one more thing on teachers' plates.
- ☞ Most projects reflected a good focus, but also recognition that lasting change took time. Some projects appeared to be overwhelmed by taking on too much change at one time.

In their own Words...

Many teachers commented on the fact that they loved the new strategies, but felt that they lacked the time to implement them.

It continues to be a challenge to find enough time to implement strategies within the confines of the curriculum.

Focus Group – Voices of the Participants

To conclude the focus group discussion, respondents were asked what advice and lessons learned they could provide for the benefit of Alberta Education and other districts and schools engaged in differentiated instruction initiatives.

What advice would you give to key decision makers, e.g., teachers, principals, government leaders, faculties of education, about how to support the implementation and advancement of differentiated instruction and learning in classrooms/schools?

In their own Words...

Educators need to understand that DI must be a philosophically embedded approach to teaching—it is not a strategy, otherwise, we see DI ebb and flow in and out of teacher practice.

Start with clear identification of needs of students. Hire staff with a passion to make a difference. Embed staff into schools to be a part of the team. Change will take time. Continue to focus on process—accept the challenges as they come—keep your eye on the outcomes. Involve all stakeholders.

Students, parents, teachers need to be involved in the continuing dialogue about DI strategies. DI honours what the learners bring to their journey and recognize that children, teachers, schools and districts are on a continuum of learning.

Provide on-site resources to allow teachers to spend time in collaboration, modelling, mentoring and learning together. Provide time for collaboration, reflection and planning of DI and the implementation of effective teaching and learning philosophies and practices. DI is a process and requires movement through various stages in understanding good practice and resources to support success for all learners.

It is critical to focus on leadership and share best practice in the implementation of differentiated instruction strategies to foster achievement for all students. Leaders provide the shared vision necessary for success.

Provide authentic professional development opportunities for teachers that are on-going, job-embedded with a clear focus to improving learning for all students.

Differentiated instruction must become an embedded philosophy.

The importance of people working from a worthwhile vision for change and involving all stakeholders in the process through exceptional opportunities for assessment, evaluation and dialogue about their AISI work (plan for success—evaluate it often—be prepared to change and modify if need be).

Continue with the AISI concept. Continue funding cycles, possibly longer (5 years!). Lots of in-service/direct training to teachers. University resources for teachers in DI. Training for principals.

FOCUS GROUP PARTICIPANTS' PERCEPTIONS OF WHAT REALLY WORKS

Focus group participants were asked to reflect on their most effective practices and strategies. They responded to the question, What really worked in your project? with the following key themes:

Teacher Leaders

Building leadership capacity by securing and retaining interested and committed educators and by providing meaningful professional development was an essential component to project success.

Opportunities for Collaborative and Supportive Relationships

Engaging in collaborative efforts with one another facilitated the implementation of consistent practices within and across classrooms and supported the development of resources to help implement differentiated instruction.

Student-centred Learning Opportunities

Providing students with the appropriate level of challenge and support to help them reach learning goals empowered students to take responsibility for their learning. Increased engagement in learning was evident.

Learning and Technology

Implementation of a Web-based learning management system was a change agent for many classroom, school and district practices regarding assessment and differentiation.

Continuous and Consistent Assessment for Learning Practices

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.

Adequate Resources

Adequate resources, in the form of funding, optimal physical environments, materials and technology, provided the opportunity for educators to effectively meet the diverse needs of their students.

Training – Mentoring, Coaching, Team Planning, Peer Teaching

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.

FUTURE NEEDS

Focus group participants were asked to select their district/site's top five issues or concerns, related to the implementation of a DI model, from a list of provided items. The following figures reflect their responses.⁶

Most Pressing Needs or Concerns Related to Implementation of a DI Model	Rank %
Finding time to plan and organize strategies and materials for differentiation	70%
Establishing goals all schools can agree on	41%
Coordinating professional development activities to support DI initiatives	36%
Getting teachers to buy into differentiated instruction	31%
Getting administrators to buy into differentiated classrooms	28%
Developing or choosing assessment tools that capture the changes observed	23%
Transferring new learnings into classroom practice across the jurisdiction	20%
Selecting and/or measuring appropriate baselines	16%
Educating and involving parents in AISI	10%
Reporting outcomes to Alberta Education	3%

⁶ The percentages reflect the number of respondents and an average of rank weights assigned to the selected response, with 3 being the most pressing need identified. N=18.

Conclusion

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.

Education is intended to promote the development of caring and responsible persons who are prepared to meet the challenges of a complex and changing world. The last decade has seen a significant change in the student populations in our schools. In addition to variance in cognitive, affective, physical and communicative development, today's classrooms include diversity in culture, ethnicity, language and socioeconomic background. 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.

Research findings of this report 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.

The consistency of the themes and issues represented were significant amongst written AISI project annual reports, between written reports and findings from the focus group and telephone interviews and between report findings and the research literature. Such consistency is encouraging, not only in that it assures us of the validity and integrity of these 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.

This research review touches upon some considerations as to how leadership is being (re)interpreted, both formally and informally, in action 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.

Also encouraging in our findings is the sense of progress and growth over Cycle 2 of AISI. This report has identified an expanding awareness and knowledge of the benefits of differentiated instruction as well as a sense of increasingly sophisticated project management and teacher research skills that are dynamically changing across our province. With several years of reporting

now available to us, we can begin to distinguish some longer term developments in school improvement efforts in Alberta and note that these trends are, overall, both positive and hopeful in terms of large scale educational reforms. There is, however, a danger in conceptualizing AISI as one homogenous entity with a linear pattern of growth, or consistent level of impact, across Cycles 1, 2 and 3. A more realistic interpretation of the heterogeneity, self-organization and emergent behaviours that embody AISI can be found in the dynamic and constantly changing network of relationships involving many different students, teachers, parents, AISI coordinators, government representatives, school communities, universities and diverse education partners. AISI is a phenomenon that eludes simple explanations because this initiative's success resides in its rich diversity and complexity.

Finally, improved student learning, as identified by both qualitative and quantitative measures, suggests that we are succeeding in focusing Alberta's school improvement efforts on practices and policies that directly and intentionally impact student learning. Rich qualitative study in the areas of differentiated instruction, collaborative professional development, language arts/literacy, mathematics/numeracy, assessment for learning and community building form much of the content of teachers' collaborative work and we are seeing success in terms of teachers and students' commitment to and engagement with innovative teaching and learning practices.

As we pause to summarize and celebrate the successes of AISI work to date, we also take time to reflect on what we have learned and the challenges we face. For future cycles of AISI, we anticipate:

- the need for strong site-based leadership to build and sustain, and a continuation in the positive trend toward strategic, coordinated professional growth programs at site and district levels
- continued efforts to educate stakeholders about the value of differentiated instruction and how this logically blends with alternative assessment approaches
- ongoing challenges and creative solutions to find sufficient time to collaborate and prioritize amongst multiple differentiation initiatives in schools and districts
- efforts to improve the qualitative and quantitative measures that link efforts to differentiate and equalize opportunities for learners to improvements in learning outcomes
- increased parental awareness of and engagement in AISI projects, through improved communication and shared leadership between schools and parents
- the need for teachers to have resources and support to engage in sustained, collaborative learning to improve their teaching, knowledge and skills.

Overall, it is clear from our reconciliation of the annual project reports, focus group activity and contemporary research findings around school improvement 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 action research interests, thus leading to collective action and a multiplicity of empowering, collaborative, innovative, accountable and creative ways to improve student learning.

Appendix One: Differentiated Instruction Scenario

Alberta Education provides detailed project descriptions of the entire range of DI or DI related projects from Cycle 2 within the AISI Clearinghouse: <http://education.alberta.ca/apps/aisi/cycle2>.

The following differentiated instruction scenario is an excerpt from the article, *Mapping a Route toward Differentiated Instruction*, by Carol Ann Tomlinson. It provides a brief sketch of the global characteristics of a differentiated instruction (DI) initiative. Its purpose is to create an image of what is possible in terms of impacting student learning within a differentiated instructional approach.

Excerpts from *Mapping a Route toward Differentiated Instruction*⁷

Even though students may learn in many ways, the essential skills and content they learn can remain steady. That is, students can take different roads to the same destination.

~ Carol Ann Tomlinson

An Alternative Approach

To make differentiation work—in fact, to make teaching and learning work—teachers must develop an alternative approach to instructional planning beyond covering the text or creating activities that students will like.

Ms. Cassell has planned her year around a few key concepts that will help students relate to, organize and retain what they study in history. She has also developed principles or generalizations that govern or uncover how the concepts work. Further, for each unit, she has established a defined set of facts and terms that are essential for students to know to be literate and informed about the topic. She has listed skills for which she and the students are responsible as the year progresses. Finally, she has developed essential questions to intrigue her students and to cause them to engage with her in a quest for understanding.

Ms. Cassell's master list of facts, terms, concepts, principles and skills stems from her understanding of the discipline of history as well as from the district's learning standards. As the year evolves, Ms. Cassell continually assesses the readiness, interests and learning profiles of her students and involves them in goal setting and decision making about their learning. As she comes to understand her students and their needs more fully, she modifies her instructional framework and her instruction.

Ms. Cassell is also teaching about ancient Rome. Among the key concepts in this unit, as in many others throughout the year, are culture, change and interdependence. Students will be responsible for important terms, such as republic, patrician, plebeian, veto, villa and Romance language; names of key individuals, for example, Julius Caesar, Cicero and Virgil; and names of important places, for instance, the Pantheon and the Colosseum.

For this unit, students explore key generalizations or principles: varied cultures share common elements. Cultures are shaped by beliefs and values, customs, geography and resources. People are shaped by and shape their cultures. Societies and cultures change for both internal and external reasons. Elements of a society and its cultures are interdependent.

⁷ Tomlinson, C. "Mapping a Route Toward Differentiated Instruction". *Educational Leadership*, 57 (1). 1999. http://pdonline.ascd.org/pd_online/diffinstr/el199909_tomlinson.html (Accessed November 25, 2007),

Among important skills that students apply are using resources on history effectively, interpreting information from resources, blending data from several resources and organizing effective paragraphs. The essential question that Ms. Cassell often poses to her students is, How would your life and culture be different if you lived in a different time and place?

Looking Inside the Third Classroom

Early in the unit, Ms. Cassell's students begin work, both at home and in class, on two sequential tasks that will extend throughout the unit as part of their larger study of ancient Rome. Both tasks are differentiated.

For the first task, students assume the role of someone from ancient Rome, such as a soldier, a teacher, a healer, a farmer, a slave or a farmer's wife. Students base their choice solely on their own interests. They work both alone and with others who select the same topic and use a wide variety of print, video, computer and human resources to understand what their life in ancient Rome would have been like.

Ultimately, students create a first person data sheet that their classmates can use as a resource for their second task. The data sheet calls for the person in the role to provide accurate, interesting and detailed information about what his or her daily schedule would be like, what he or she would eat and wear, where he or she would live, how he or she would be treated by the law, what sorts of problems or challenges he or she would face, the current events of the time and so on.

Ms. Cassell works with both the whole class and small groups on evaluating the availability and appropriate use of data sources, writing effective paragraphs and blending information from several sources into a coherent whole. Students use these skills as they develop the first person data sheets. The teacher's goal is for each student to increase his or her skill level in each area.

The second task calls on students to compare and contrast their own lives with the lives of children of similar age in ancient Rome. Unlike the first task, which was based on student interest, this one is differentiated primarily on the basis of student readiness. The teacher assigns each student a scenario establishing his or her family context for the task: "You are the eldest son of a lawmaker living during the later years of the period known as Pax Romana," for example. Ms. Cassell bases the complexity of the scenario on the student's skill with researching and thinking about history. Most students work with families unlike those in their first task. Students who need continuity between the tasks, however, can continue in a role familiar from their first investigation.

All students use the previously developed first person data sheets as well as a range of other resources to gather background information. They must address a common set of specified questions: How is what you eat shaped by the economics of your family and by your location? What is your level of education and how is that affected by your status in society? How is your life interdependent with the lives of others in ancient Rome? How will Rome change during your lifetime? How will those changes affect your life? All students must also meet certain research and writing criteria.

Despite the common elements, the task is differentiated in several ways. It is differentiated by interest because each student adds questions that are directed by personal interests: What games did children play? What was the practice of science like then? What was the purpose and style of art?

Readiness differentiation occurs because each student adds personal research and writing goals, often with the teacher's help, to his or her criteria for success. A wide range of research resources is available, including books with varied readability levels, video and audiotapes, models and access to informed people. The teacher also addresses readiness through small group sessions in which she provides different sorts of teacher and peer support, different kinds of modelling and different kinds of coaching for success, depending on the readiness levels of students.

Finally, the teacher adds to each student's investigation one specific question whose degree of difficulty is based on her most recent assessments of student knowledge, facility with research and thinking about history. An example of a more complex question is, How will your life differ from that of the previous generation in your family and how will your grandchildren's lives compare with yours? A less complex, but still challenging question is, How will language change from the generation before you to two generations after you and why will those changes take place?

Learning profile differentiation is reflected in the different media that students use to express their findings: journal entries, an oral monologue or a videotape presentation. Guidelines for each type of product ensure quality and focus on essential understandings and skills established for the unit. Students may work alone or with a parallel partner who is working with the same role, although each student must ultimately produce his or her own product.

At other points in the study of ancient Rome, Ms. Cassell differentiates instruction. Sometimes, she varies the sorts of graphic organizers that students use when they read, do research or take notes in class. She may use review groups of mixed readiness and then conduct review games with students of like readiness working together. She works hard to ask a range of questions that move from concrete and familiar to abstract and unfamiliar in all class discussions. She sometimes provides homework options in which students select the tasks that they believe will help them understand important ideas or use important skills best. Of course, the class also plans, works, reviews and debates as a whole group.

Students find Ms. Cassell's class engaging—and not just because it's fun. It's engaging because it shows the connection between their lives and life long ago. It helps them see the interconnectedness among times in history and make links with other subjects. It tickles their curiosity. And it provides a challenge that pushes each learner a bit further than is comfortable—and then supports success. Sometimes, those things are fun. Often, they are knotty and hard. Always, they dignify the learner and the subject.

Ms. Cassell's class is highly likely to be effective for her varied learners, in part because she continually attempts to reach her students where they are and move them on—she differentiates instruction. The success of the differentiation, however, is not a stand alone matter. It is successful because it is squarely rooted in student engagement plus student understanding.

This teacher knows where she wants her students to arrive at the end of their shared learning journey and where her students are along that journey at a given time. Because she is clear about the destination and the path of the travellers, she can effectively guide them and she varies or differentiates her instruction to accomplish this goal. Further, her destination is not merely the amassing of data but rather the constructing of understanding. Her class provides a good example of the close and necessary relationship between effective curriculum and instruction and effective differentiation.

The First Step Is the Compass

Ms. Cassell plans for what students should know, understand and be able to do at the end of a sequence of learning. She dignifies each learner by planning tasks that are interesting, relevant and powerful. She invites each student to wonder. She determines where each student is in knowledge, skill and understanding and where he or she needs to move. She differentiates instruction to facilitate that goal. For her, differentiation is one piece of the mosaic of professional expertise. It is not a strategy to be plugged in occasionally or often, but is a way of thinking about the classroom. In her class, there is a platform for differentiation.

Ms. Cassell helps us see that differentiated instruction must dignify each learner with learning that is whole, important and meaning making. The core of what the students learn remains relatively steady. How the student learns—including degree of difficulty, working arrangements, modes of expression and sorts of scaffolding—may vary considerably. Differentiation is not so much the stuff as the how. If the stuff is ill conceived, the how is doomed.

The old saw is correct: Every journey does begin with a single step. The journey to successfully differentiated or personalized classrooms will succeed only if we carefully take the first step—ensuring a foundation of best practice curriculum and instruction.

Appendix Two: Example Strategies Supporting Differentiation

Several key elements guide differentiation in the classroom. Tomlinson (2001) identifies three elements of the curriculum that can be differentiated: content, process and products. Several examples of strategies supporting differentiation are outlined below.

Content (providing multiple options for taking in information)	Process (providing multiple options for making sense of the ideas)	Product (providing multiple options for expressing what they know)
<ul style="list-style-type: none"> <input type="checkbox"/> Use a variety of resources; e.g., text, video, images, speakers <input type="checkbox"/> Prepare glossary of new vocabulary before a reading assignment or lesson <input type="checkbox"/> Provide materials at a variety of reading levels <input type="checkbox"/> Provide an outline of content to be covered <input type="checkbox"/> Relate new content to previously learned content <input type="checkbox"/> Allow students a choice of topics <input type="checkbox"/> Adjust vocabulary level for directions and assignments <input type="checkbox"/> Allow students access to technology resources to support content <input type="checkbox"/> Provide extension/enrichment opportunities <input type="checkbox"/> Select reading material suited to students' interests <input type="checkbox"/> Allow oral reading or taped readings of print material <input type="checkbox"/> Provide models/examples of completed work for students to compare against <input type="checkbox"/> Allow use of tools, such as calculators, word processors and spell checkers <input type="checkbox"/> Use visual aids and manipulatives to make abstract concepts more concrete 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide multisensory instruction; e.g., oral, visual, hands-on <input type="checkbox"/> Provide whole-to-part and part-to-whole explanations <input type="checkbox"/> Have students rephrase instructions orally <input type="checkbox"/> Provide ample wait time and, if necessary, clues in answering questions <input type="checkbox"/> Use motivational sets and demos to introduce as well as to reinforce <input type="checkbox"/> Adjust the pace of instruction <input type="checkbox"/> Break the lesson into manageable parts to allow students to catch up, if necessary <input type="checkbox"/> Photocopy notes to allow students to listen rather than struggle to keep up copying <input type="checkbox"/> Use graphic organizers <input type="checkbox"/> Develop a consistent pattern to present material throughout the year <input type="checkbox"/> Use models to help students visualize <input type="checkbox"/> Provide mini workshops to re-teach or extend skills <input type="checkbox"/> Provide a structure to follow for assignments and projects <input type="checkbox"/> Use games to practise mastery of information and skills <input type="checkbox"/> Summarize at the end of the lesson and allow questions from students 	<ul style="list-style-type: none"> <input type="checkbox"/> Produce one product in a group and quiz individuals orally about it <input type="checkbox"/> Allow oral presentations to be taped rather than live <input type="checkbox"/> Use learning journals, logs or diaries to track understanding <input type="checkbox"/> Accept demonstrations, oral presentations and dramas as well as written work <input type="checkbox"/> Allow students to demonstrate knowledge through models, pictures and diagrams <input type="checkbox"/> Accept classroom discussion as part of a grade <input type="checkbox"/> Use creative writing as a vehicle for presenting learning <input type="checkbox"/> Provide a choice of tasks to complete on a particular topic <input type="checkbox"/> Provide opportunities for students to contract for grades, based on products <input type="checkbox"/> Use integrated projects as products for more than one subject area <input type="checkbox"/> Allow students opportunities to work both individually and as part of a group

Appendix Three: Research Methodology

The purpose of this report was to gather and synthesize findings from a review of projects that made successful use of differentiated instructional approaches to improve student learning. The audience for this report includes key decision makers, teachers interested in replicating successful practices and others within the education community interested in school improvement initiatives.

Three sources of data were analyzed for this report:

- annual reports from 25 successful projects from Cycle 2 (2003–2006)
- findings from a focus group of representatives from 18 schools and districts drawn from the above noted sample
- findings from telephone interviews with schools or districts that did not attend the focus group.

ETHICAL CLEARANCE

All participants in the focus group and telephone interviews were informed, verbally and in writing, about the voluntary nature of the research activity and their right to opt out of the research. In protecting the human subjects and participant rights, every effort has been made to maintain the privacy of the individuals in attendance. The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta.

RESEARCH REVIEW PROCEDURE

1. Two reviewers conducted a double blind review of AISI project annual reports from 25 selected projects. The reports were reviewed to:
 - a. identify common findings, themes and promising practices
 - b. construct preliminary questions for phone interviews and the focus group
 - c. develop a preliminary list of potential candidates for the focus group.
2. Reviewers participated in a focus group with 18 representatives of school districts and charter schools from the 25 selected projects. Focus group data included:
 - a. chart paper notes, taken during discussions
 - b. handouts distributed to participants for individual completion of questions
 - c. reviewers' observations and synthesis, drawn from independent notes, taken during and after focus group sessions.
3. Reviewers conducted a series of telephone interviews, each approximately an hour in length, with additional projects that were not represented at the focus group. The handouts used at the focus group were used to structure the telephone interviews.
4. Findings were further triangulated by review of practitioner and scholarly literature related to differentiated instruction.

PROJECT SELECTION CRITERIA

The following sources of data were used to determine projects selected for this review:

- ☞ AISI Cycle 2 (2003–2006) projects related to differentiated instruction that had statistically significant effect size, e.g., small, medium, large, on any of the following student learning measures:
 - ☞ project measures, based on results of locally developed student achievement measures and/or standardized tests
 - ☞ project measures, based on Provincial Achievement Tests (PAT) or Diploma (Dip) Examination (Dip) results.

EFFECT SIZE CALCULATION

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).

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 expresses the increase or decrease in standard deviation units.

For each measure, the baseline and annual results were converted to standardized (z) scores with a mean of zero and a standard deviation of one. The effect size for each measure was determined by the difference between the z scores for the baseline and the actual annual results and then averaged over the measures for each project and weighted by the number of students involved in each measure. These average effect sizes were grouped into four categories: no effect⁸ (less than zero or not significant), minimal (.01 to less than 0.2), small (0.2 to 0.3), medium (0.4 to 0.7) and large (0.8 or higher).

⁸ No effect includes all positive effect sizes that are not statistically significant.

Appendix Four: Focus Group and Telephone Interview Questions

AISI Focus Group, October 26, 2007

Lessons Learned from Differentiated Instruction Projects in Cycle 2

During the focus group, participants were asked to individually complete written responses to a number of questions. The handout used contained the following verbatim questions. The same questions were used to structure follow-up telephone interviews.



Part One: Some Essential Questions

AISI Differentiated Instruction Focus Group Individual Response Sheet #1

1. Why did you choose differentiated instruction as a focus for your AISI project?
- 2a. What really worked in your project?
- 2b. Why do you think it worked?
- 3a. What were the most significant challenges to the success of your DI initiative?
- 3b. What steps did you take (or are you taking) to overcome these challenges?



Part Two: Developing Themes and Exploring Strategies

AISI Differentiated Instruction Focus Group Individual Response Sheet #2

1. Did your Cycle 2 DI project influence the Cycle 3 assessment practices in your school jurisdiction? If so, how?
2. Who played the critical leadership role in the DI project's success? (Please check)
Principal__ Assistant Principal __ Lead Teacher __ AISI Coordinator __ Other _(Describe)
3. If possible, please describe some positive leadership and growth in staff that has emerged from the DI work in your school jurisdiction.
4. Has your jurisdiction been able to sustain a culture of differentiated instruction learning following completion of AISI Cycle 2?
Yes __ No__
If yes, please explain how. If no, please explain why not.
5. Did your DI initiative experience resistance from some staff members? What was the nature of this resistance and what was its impact on your project?

6. Listed below are a number of instructional strategies that a district/site might have implemented during its DI focused initiative. In **Column One**, please check off all strategies that were used in your DI project. In **Column Two**, please rank order the top five strategies you felt were most effective in differentiating instruction for the students in your district/site, with 1 being most effective, 2 the next most effective, 3 the third most effective and so on.

7. From the following list, please rank order the top four suggestions on how best to assist teachers in

1	2	Differentiated Instruction Strategy
_____	_____	Compacting Curriculum
_____	_____	Acceleration/Deceleration
_____	_____	Enrichment Clusters
_____	_____	Reading Buddies
_____	_____	Small Group Direct Instruction
_____	_____	Learning Contracts
_____	_____	Drill-focused Cooperative Tasks
_____	_____	Thought/Production- focused Cooperative Tasks
_____	_____	Choice Boards
_____	_____	Learning Centres
_____	_____	Interest Centres
_____	_____	Multiability Options; e.g., MI, Triarchic Theory
_____	_____	Adjusting Questions
_____	_____	Flexible Grouping
_____	_____	Peer Tutoring
_____	_____	Peer Teaching
_____	_____	Buddy Studies
_____	_____	Anchoring Activities
_____	_____	Independent Study Projects
_____	_____	Tiered Assignments
_____	_____	Tiered Products
_____	_____	Alternative Assessments
_____	_____	Graduated Rubrics
_____	_____	Readiness/Ability
_____	_____	Learning Profiles/Styles
_____	_____	Student Interest
_____	_____	Other (please describe)

professional growth in differentiation, with 1 being most effective, 2 second most effective and so on.

- _____ Provide development that matches teacher/school goals; i.e., common experience.
- _____ Provide time for ongoing dialogue about differentiation via job embedded activity, professional release time and/or staff meetings.
- _____ Develop common understanding of differentiation and related terms; i.e., common language.
- _____ Support a peer modelling, mentoring or coaching model for professional growth.
- _____ Support beginning teachers in their efforts to implement differentiated instruction and learning.
- _____ Other (please describe)
- _____ Other (please describe)

8. During Cycle 2, which of the following strategies to involve parents has your district/site attempted as part of its AISI project? In **Column One**, please check off all items that apply to your AISI project. In **Column Two**, please rank order the top three strategies you felt were most effective in involving parents, with 1 being most effective, 2 the next most effective and 3 the third most effective.

1	2	Parent Involvement Strategy
_____	_____	Presentations at parent councils
_____	_____	AISI reports in school newsletter(s)
_____	_____	Public events, public displays and/or articles in local newspapers
_____	_____	Theme or celebration nights that include parents
_____	_____	Parent satisfaction surveys
_____	_____	AISI news on school and/or district Web sites
_____	_____	Increased telephone and/or face to face contact with parents
_____	_____	Increased liaison contacts with other community agencies
_____	_____	Student attendance/achievement software
_____	_____	Other (please describe)
_____	_____	Other (please describe)

9. From the following list, please rank the top five items that represent your district/site’s most pressing needs or concerns related to the implementation of a DI model, with 1 being most pressing, 2 second most pressing and so on.

- _____ Establishing goals that all schools can agree on
- _____ Finding time to plan and organize strategies and materials for differentiation
- _____ Getting teachers to buy into differentiated instruction
- _____ Selecting and/or measuring appropriate baselines
- _____ Developing or choosing assessment tools that capture the changes observed
- _____ Getting administrators to buy into differentiated classrooms
- _____ Educating and involving parents in AISI
- _____ Transferring new learnings into classroom practice across the jurisdiction
- _____ Reporting outcomes to Alberta Education
- _____ Coordinating professional development activities to support DI initiatives
- _____ Other (please describe)



Part Three: Quick Writes

AISI Differentiated Instruction Focus Group Quick Write Sheet #1

What advice would you give to key decision makers, e.g., teachers, principals, government leaders, faculties of education, about how to support the implementation and advancement of differentiated instruction and learning in classrooms/schools?

AISI Differentiated Instruction Focus Group Quick Write Sheet #2

1. The instructional strategies used within our DI project helped our students learn.

Strongly Disagree Disagree Neither agree/disagree Agree Strongly Agree

2. Our students enjoy learning more as a result of our participation in the DI initiative.

Strongly Disagree Disagree Neither agree/disagree Agree Strongly Agree

3. Participation in DI has led to improvement in our students’ grades.

Strongly Disagree Disagree Neither agree/disagree Agree Strongly Agree

4. Students were more self-directed and metacognitive as learners as a result of their participation in the DI initiative.

Strongly Disagree Disagree Neither agree/disagree Agree Strongly Agree

5. Participation in our DI initiative has had a positive impact on my (or the educators involved) personal approach to teaching and learning.

Strongly Disagree Disagree Neither agree/disagree Agree Strongly Agree

6 Technology helped our DI efforts to reach all students.

Strongly Disagree Disagree Neither agree/disagree Agree Strongly Agree

Appendix Five: References and Recommended Resources

- Armstrong, T. *Multiple Intelligences in the Classroom* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development, 2000.
- Bennett, B., and C. Rolheiser. *Beyond Monet: The Artful Science of Instructional Integration*. Toronto, ON: Bookation Inc., 2001.
- Black, P., C. Harrison, C. Lee, B. Marshall and D. William. *Assessment for Learning: Putting it into Practice*. New York, NY: Open University Press, 2003.
- Chapman, C., and R. King. *Differentiated Assessment Strategies: One Tool Doesn't Fit All*. Thousand Oaks, CA: Corwin Press, 2005.
- Cooper, D. *Talk about Assessment: Strategies and Tools to Improve Learning*. Toronto, ON: Nelson, 2007.
- Davies, A. *Making Classroom Assessment Work* (2nd ed.). Courtenay, BC: Connections Pub., 2007.
- Dodge, J. *Differentiation in Action*. New York, NY: Scholastic, 2005.
- Gregory, G.H. and C. Chapman. *Differentiated Instructional Strategies: One Size Doesn't Fit All*. Thousand Oaks, CA: Corwin Press, 2002.
- Gregory, G.H. *Differentiated Instructional Strategies in Practice: Training, Implementation and Supervision*. Thousand Oaks, CA: Corwin Press, 2003.
- Oaksford, L. and L. Jones. *Differentiated Instruction Abstract*. Tallahassee, FL: Leon County Schools, 2001.
- Smutny, J.F. *Differentiating for the Young Child: Teaching Strategies Across the Content Areas*. Thousand Oaks, CA: Corwin Press, 2004.
- Tomlinson, C.A. *How to Differentiate Instruction in Mixed-ability Classrooms* (2nd Ed.). Alexandria, VA: ASCD, 2001.
- Tomlinson, C.A. and S.D. Allan. *Leadership for Differentiating Schools and Classrooms*. Alexandria, VA: ASCD, 2000.
- Tomlinson, C.A. *Fulfilling the Promise of the Differentiated Classroom: Strategies and Tools for Responsive Teaching*. Alexandria, VA: Association for Supervision and Curriculum Development, 2003.
- Tomlinson, C.A. and J. McTighe. *Integrating Differentiated Instruction and Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development, 2006.

Links to Resources on Differentiated Instruction

Tomlinson, C.A. "Differentiation of Instruction in the Elementary Grades." *ERIC Digest*. ERIC_NO: ED443572 (2000). Available online at <http://ericir.syr.edu/plweb/cgi/obtain.pl>.

This digest describes differentiated instruction, discusses the reasons for differentiated instruction, outlines what makes it successful and suggests how teachers may begin implementation.

Tomlinson, C.A. and S.D. Allan. "Leadership for Differentiating Schools and Classrooms." Association for Supervision and Curriculum Development. Available online at <http://www.ascd.org/readingroom/books/tonlinson00book.html>.

This Web site contains two chapters from Tomlinson's publication, *Leadership for Differentiating Schools and Classrooms*, Association for Supervision and Curriculum Development. This book is designed for those in leadership positions to learn about differentiated instruction.

Tomlinson, C. "Mapping a Route Toward Differentiated Instruction." *Educational Leadership*, 57 (1). Available online at http://pdonline.ascd.org/pd_online/diffinstr/el199909_tomlinson.html.

Theroux, P. "Enhance Learning with Technology. Differentiating Instruction." (2001). Available online at <http://members.shaw.ca/priscillatheroux/differentiating.html>.

Theroux provides a thorough site on differential instruction for a Canadian school district. The site provides links to teacher attitudes, learning strategies, teacher resources, integrating technology, integrating outcomes, exploring projects, sample lesson plans*, planning projects, thinking skills, developing Web pages, assessing and tutorials.