

Students with Disabilities



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“We need to be clear that diversity is an essential part of the human condition and needs to be anticipated and celebrated.”

– Dr. Dave Edyburn, Associate Professor, University of Wisconsin, Milwaukee

Diversity has become one of the defining features of Alberta’s schools. All classrooms today include a growing number of students with diverse learning needs, including students with disabilities. Ensuring that these students can be successful requires teachers to not only understand the unique learning needs of individual students but to be willing to plan for and create optimal learning opportunities and supports throughout the school day and across subject areas. In a diverse classroom, no single method can reach all learners.

How a differentiated approach supports students with disabilities

The 2005 *Differentiated Instruction: A Research Brief for Practitioners*, conducted by University of Alberta, found that of all groups of students, those with disabilities and/or at-risk of academic failure experience the greatest gains through a differentiated approach. According to this research, the key component that made the difference was explicit and targeted instruction (e.g., small group and one-to-one interventions) that increased intensity of instructional time.

Other research findings from that study identified the importance of:

- a supportive, caring learning community, including positive relationships with trusted adults
- early intervention and targeted instruction
- collaboration in the development of individual learning goals with students, parents, administrators, counsellors and subject teachers
- development of self-advocacy for students at-risk of academic failure.

Differentiated instruction benefits students with disabilities because it creates and promotes an environment in which learning differences are not just tolerated, they are expected and valued. A differentiated approach supports an inclusive education system in which all students have the best possible learning opportunities.

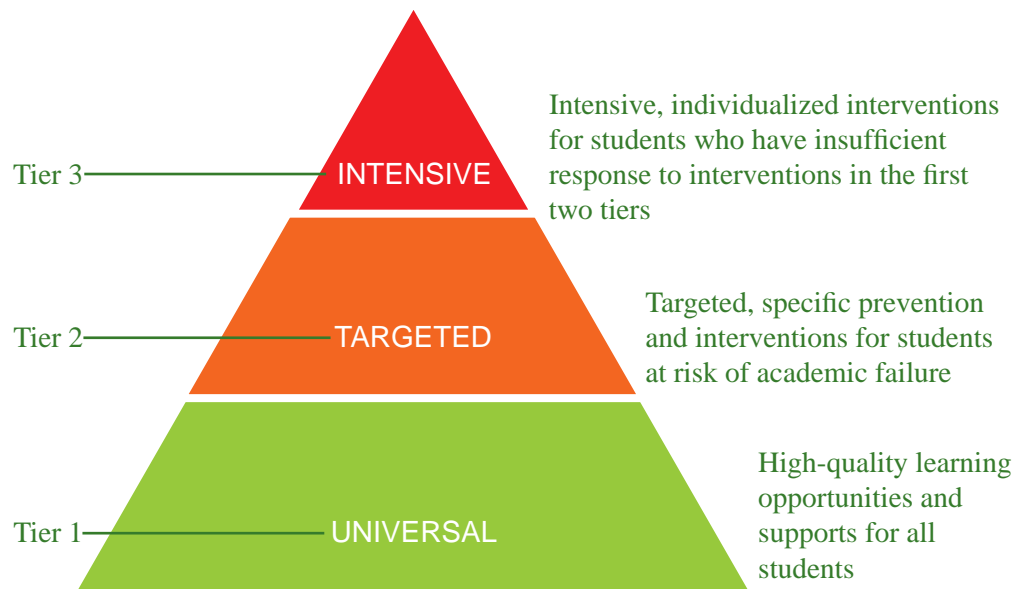
The range of instructional options and supports in place in a differentiated classroom will address many of the unique learning needs of students with disabilities. In addition, teachers who use a differentiated approach may be more willing and able to further adjust instruction to meet the needs of students with more intensive learning difficulties.

Finally, the process of ongoing assessment *for* learning, which is embedded in a differentiated instruction approach, also benefits students with disabilities. It allows teachers to more quickly and naturally identify which types of instructional strategies and supports individual students are responding to positively or not responding to.

Response to instructional supports and interventions

Students with disabilities have a continuum of needs that can be met to varying degrees by differentiated instruction. One way to consider the differing levels of needs of students is based on their response to instructional supports and interventions. For some students with disabilities, differentiated instruction may be enough to meet their learning needs; for others, differentiated instruction is the starting point for building individualized programming. This is illustrated in the model below.

Multi-tiered Response to Intervention Model



The base of the pyramid is made up of students whose disabilities have a mild to moderate impact on their learning. These students will respond positively to many of the strategies and supports typically used in a differentiated classroom, including accessible learning resources, explicit strategy instruction and structured opportunities.

The next and smaller tier is made up of those students who will benefit from differentiated instruction but who also need more targeted supports and interventions such as levelled learning materials, small group and/or individualized instruction. Without these supports and interventions, this group of students is at risk of school failure, early school leaving and additional difficulties such as behaviour problems. Some of the students in this group will need different levels of support at specific points in their schooling while, for other students, the level of support needed may fluctuate throughout the grades.

At the top of the pyramid is a small group of students who need intensive individualized supports and intervention that go well beyond differentiated instruction. These students will need specialized supports and services. Differentiated instruction may provide some social benefits but the learning needs of this group of students go beyond what a differentiated instruction approach alone could provide.

It is essential that all students with disabilities, no matter where they might be on this pyramid, have high academic expectations set for them. The starting point of programming for all students in Alberta, whatever their particular ability or need, is the programs of study.

A team approach

All students with disabilities, particularly students with more specialized needs, require a collaborative and supportive team approach. This team, often called the learning team, is made up of people with various types of expertise who work together to:

- support the student
- support the classroom teacher
- share information, insights and questions to identify strategies and supports, that will increase the student's learning success.

At a minimum, the learning team includes the classroom teacher (who is the key educator) and parents of the student. It also may include a school-based learning supports teacher (sometimes called a special education coordinator, a resource teacher or a learning coach), a school administrator and other school staff. This group should be informal and collegial.

Parents have essential information and important perspectives about their child's learning needs. The support of parents has positive and pervasive effects on a student's success in school, and parents should be encouraged to feel that their contribution is a valuable part of the learning team process.

Some learning teams also include specialists that provide support and programming advice to the classroom teacher. These specialists could include speech pathologists, physiotherapists or occupational therapists, psychologists, mental health therapists, vision consultants or audiologists, and educational consultants with expertise in particular areas such as deaf education, Autism or behaviour.

As much as possible, students also should play an active role in their own learning teams. When appropriate, students should participate in meetings, contribute to plans and provide feedback on what is working and what is not.

Learner profiles and assessment

Creating a learning profile for a student with disabilities is an opportunity to get to know that student and to see beyond the student's disabilities. It is an opportunity to identify strengths, abilities and interests and gain a better understanding of the implications disabilities have for the student's learning and social participation. This information will help teachers choose supports that are responsive and meaningful.

Accurate assessment *for* and *of* learning are critically important to ensure all students are successful. The goal of assessment is to better understand the needs of the learner. Parents are an important source of information and insight about their children and should be involved in the assessment process. For example, they can provide information about their child's strengths and needs and wishes and dreams for the future.

The assessment process is multi-tiered, multidisciplinary and occurs in a continuous cycle—from planning through to final assessment and evaluation. The assessment process begins at the classroom level, with the teacher using informal techniques such as observation, reading inventories and other diagnostic tools to explore how the student is learning and to identify areas of strength and concern.

At the school level, it may be helpful to do more formal academic assessment, as well as screenings for sensory or other issues that could interfere with learning. School-based assessment should provide initial information for identifying and trying out various strategies, supports and interventions to see if they make a positive difference for the students.

For some students with disabilities, it may be necessary to go beyond the school to arrange for other types of assessments such as emotional-social needs, speech/language, fine and gross motor or sensory functioning such as hearing and vision. This type of specialized assessment should be used to inform educational programming and decision making.



For some students with a disability, a diagnosis can be a protective factor. A specific diagnosis may have important implications for a student's educational programming, social and emotional learning and overall well-being. This knowledge can help teachers align supports and strategies with students' unique needs. A knowledge of the disability also can help teachers know what to look for in ongoing functional assessments of what the student can do (rather than what he or she cannot do) and identify potential barriers to learning in the classroom that require supports and creative solutions.

For more information on specific strategies for teaching students with specialized learning needs, see the following Alberta Education publications.

- *Unlocking Potential: Key Components of Programming for Students with Learning Disabilities* (2003) at <http://education.alberta.ca/admin/special/resources/unlocking.aspx>.
- *Teaching Students with Autism Spectrum Disorders* (2003) at <http://education.alberta.ca/admin/special/resources/autism.aspx>.
- *Teaching Students with Fetal Alcohol Spectrum Disorder: Building Strengths, Creating Hope* (2004) at <http://education.alberta.ca/admin/special/resources/fasd.aspx>.
- *Focusing on Success: Teaching Students with Attention Deficit/Hyperactivity Disorder* (2006) at <http://education.alberta.ca/admin/special/resources/adhd.aspx>.

Understanding a student's unique needs also will help teachers plan for learning needs that may go beyond the provincial programs of study. For example, students with vision loss, in addition to the regular curriculum, require an extended curriculum to learn skills related to mobility and manage materials and technology to support literacy (e.g., learning to read Braille or use magnifiers for large print). Students who are deaf and hard-of-hearing, as well as some students with physical disabilities, also may need extended curricula. This will require working collaboratively with district and regional specialists and developing a system of supports to respond to the unique needs of these students and their families.

For more information on programming for students with specialized learning needs see the following Alberta Education publications.

- *Essential Components of Educational Programming for Students who are Blind or Visually Impaired* (2006) at http://education.alberta.ca/media/511690/ecep_blind_or_visually_impaired.pdf.
- *Essential Components of Educational Programming for Students who are Deaf or Hard of Hearing* (2007) at http://education.alberta.ca/media/511693/ecep_deaf_or_hard_of_hearing.pdf.
- *Essential Components of Educational Programming for Students with Autism Spectrum Disorders* (2006) at http://education.alberta.ca/media/511684/ecep_autism_spectrum_disorder.pdf.

- *Essential Components of Educational Programming for Students with Behaviour Disabilities* (2006) at http://education.alberta.ca/media/511687/ecep_behaviour_disabilities.pdf.

Flexible groupings

Flexible grouping is a hallmark of differentiated instruction and all students, including students with disabilities, need to be part of many different learning groups, including:

- large group instruction
- small group instruction
- one-to-one instruction
- cooperative small group learning
- partner learning
- peer teaching pairs
- independent learning activities.

It is essential that group membership is flexible and ever-changing to allow students to work with a diversity of peers. Group membership can be based on multiple factors including interest, previous knowledge and experience, aptitude, social compatibility, student choice and random assignment. Flexible grouping prevents students from being labelled or pigeonholed (e.g., the helper versus the helped).

Students need an accepting, safe learning environment that encourages them to take risks and ask for help. Teachers should provide explicit instruction, cueing and prompts, guided practice and feedback. They also have to monitor the social behaviour in groups on an ongoing basis to ensure the groups are providing the safe and accepting learning environment for all students involved.

All students need to learn the social rules and roles in each type of grouping so that they can contribute to this safe environment. Some students with disabilities may need coaching to gain the social skills necessary to function successfully in different types of groups. Other students in the class also may need to learn specific strategies to facilitate successful communication and group work. For example, it may be helpful to teach the class about the importance of eye contact and direct language when working with a peer with a communication difficulty. Small groups and partner work can provide authentic and motivating opportunities for all students to develop stronger social and communication skills.

Flexible and accessible learning resources

Many students, including students with disabilities, will benefit from learning resources that are flexible and accessible. For example, digital versions of print-based text can be used by students with low vision who need to adjust the size of print, by students with reading difficulties who use text-to-speech software or by students with physical disabilities who need computer-assisted technology to manipulate pages. Digital text also can provide other accessibility features such as alternate ways of displaying or organizing information, translational options (such as Braille translation), or additional features that support learning such as built-in dictionaries or glossaries, links to additional background information or opportunities to see additional samples or do additional practice.

Accessible resources also can be print-based resources. Varying reading levels, including organizers at the beginning of chapters, and visuals that support and enhance text are all ways to make resources more responsive to diverse learning needs.

Digital versions of authorized Grades 4 to 12 student basic textbooks for English language arts, mathematics, social studies and science are available through the Digital Repository for Students with Disabilities. For more information see: <http://www.lrc.education.gov.ab.ca/pdf/Digr-Info-Flyer.pdf>.

Essential instructional components

Research identifies several essential instructional components that are particularly important for classroom instruction to be effective for students with learning difficulties.

Duration and intensity of instruction

Students with learning difficulties may require interventions of longer duration and intensity than other students in order to achieve mastery of both foundational and higher-level skills and to be able to apply their learning to new situations. They may need more learning opportunities distributed over a longer time. In addition, these students may need instruction that is of greater intensity (e.g., more small-group or guided-practice learning activities). Teachers can make decisions regarding the intensity and duration of instructional components by carefully assessing the individual student's understanding and progress in order to gauge his or her response to instruction.

Cumulative review of important concepts and skills

Cumulative review of previously mastered content promotes retention. Early in the learning of a new skill, many students tend to be error-prone, not very fluent, and inconsistent in their application of skills to new situations. Students with learning difficulties generally take longer to move past this stage than other students. These students need more opportunities to practise their skills and to

review prior learning. Cumulative review needs to be targeted (e.g., reviewing key skills and concepts that are not fully mastered) and should incorporate a wide range of activities. For example, students who struggle with learning letter–sound relationships may need to continually review previously learned sounds and sight words. These reviews can be a combination of quick oral reviews (e.g., “Tell me the following sounds for these letters.”), short activities and structured games targeting the skill.

Guided practice and explicit instruction in transferring knowledge

Students with learning difficulties often have difficulty transferring knowledge. They are particularly in need of guided practice and specific instruction that helps them transfer their skills to new problem-solving contexts and to situations that present new content but require previously taught skills. Teaching also should make explicit connections across previous and current content areas.

Language tailored for instruction

The oral and written language you use for instruction and for providing feedback to students has a direct impact on the learning of students. Monitor yourself to ensure you are using:

- appropriate level of language; e.g., simple, direct, unambiguous language
- appropriate level of explicitness
- concrete examples
- appropriate level of description and detail
- feedback that guides student thinking
- explicit error correction
- positive feedback that motivates and encourages students.

Vary the complexity of language of instruction (oral and written), via the number/amount, sequence, and/or complexity of instructions or information. For instance, explicitly state themes rather than have students infer them, vary pacing, and elaborate and review key ideas. For example, teachers may need to:

- simplify and shorten instructions (often visual reminders/cues are useful)
- provide concrete examples of more abstract concepts
- present new information with an emphasis on main ideas and provide clear conceptual links between key ideas and supporting details.

Sometimes, these students will need to hear ideas restated in different ways and will benefit from multiple opportunities to listen to the teacher. Teachers can provide important tips, cues and explicit feedback in the form of interactive dialogue, thus acting as the students’ coach.



Language of instruction also includes the print-based materials used in the class to communicate content and instructions. There are a number of strategies for modifying or expanding upon the language of instruction in materials, such as adding visuals (e.g., picture charts, symbols, photos), providing definitions for specialized language and adjusting reading levels so students with less-developed reading skills can read and understand the text.

Concurrent instruction in foundational skills and higher-order processes

Students need systematic instruction to master foundational skills such as computation and decoding if they are to achieve proficiency in higher-order skills. At the same time, they need instruction that also targets higher-order skills such as problem-solving and comprehension strategies. Students need clear instruction on basic skills and concepts as well as on the use of higher-order strategies and metacognitive principles that promote and consolidate learning. For example, a student with limited word-recognition skills needs targeted instruction in this area while at the same time learning comprehension strategies for understanding text. To do this, the teacher could model the comprehension strategies when reading aloud from a more advanced text.

Scaffolding instruction

There are a variety of specific teaching strategies that are especially effective for supporting students with learning difficulties. Scaffolding is the overarching strategy that is most effective for these students, and specific types of scaffolding include:

- modelling
- guided practice
- memory prompts and supports
- strategy instruction
- use of graphic organizers.

Specific strategies can overlap and can also be used in tandem. For example, when working with higher-order cognitive thinking processes, modelling, guided practice and memory prompts could all be used to support student learning.

Scaffolding is a key component of a differentiated instruction approach and is especially important for students with learning difficulties. Scaffolding is a way to:

- move the student from one place to another in terms of learning
- gradually transfer the responsibility for learning from the teacher to the student, thereby fostering a more independent learner.

Teachers can provide scaffolds in a variety of ways, such as activating background knowledge, providing prompts or think sheets, or facilitating guided practice. Collaborative and supportive interactions between a student and a more knowledgeable other (the teacher, a parent, or another student) help students bridge the gap between what they know and what they do not know. Scaffolding support also can be created by technology or written material that provides prompts and other needed material.

Effective scaffolded instruction:

- involves intentional planning
- considers student strengths, needs and current level of knowledge and skill (as identified in individual learner profiles and other in-class assessment strategies)
- focuses on a specific learning goal or type of skill
- provides tailored assistance that is adjusted on an as-needed basis
- provides emotional support (e.g., praise and encouragement)
- provides specific feedback that highlights student progress and identifies specific behaviours that contributed to success
- controls for frustrations and risk by creating learning environments that are safe and learning tasks that are within what a student can do
- helps students begin to generalize and internalize learning
- helps students become more confident and independent learners.

Accurately determining a student's current level of functioning is key to planning and implementing scaffolded instruction. For many students with learning difficulties, scaffolding will be adjustable but ongoing. To maintain a reasonable level of competence, many students with learning difficulties will require scaffolding for the long term. The degree of scaffolding needed may change across subject areas, types of learning task and contexts and environments for learning. Teachers can help students generalize their learning by identifying other contexts where they can apply the process and by actively encouraging the students to practise the task or process in these contexts.

For more information on scaffolded instruction, see *Chapter 5: Differentiated Learner Experiences*.

Modelling¹

“Modelling” can take on a number of forms for a number of purposes. Some common examples include the following.

- **Thinking aloud.** The teacher overtly verbalizes the thought processes used to complete a particular activity. Teachers can use “think-aloud” techniques in a number of instructional contexts including modelling how a reader processes text and demonstrating writing techniques such as planning an essay or revising a piece of writing.
- **Modelling learning strategies.** For example, by modelling good reading strategies the teacher makes explicit those skills that cannot be readily perceived by students. Students also can be invited to think out loud and model their strategies for decoding words, making predictions, summarizing and evaluating text.
- **Demonstrating the task.** The teacher may, for example, demonstrate all the steps in completing a graphic organizer or show the steps that students need to take to solve a specific type of math problem.

Guided practice²

In “guided practice,” the teacher provides students with support and guidance as they initially learn new information or tasks, and then gradually phases out this support as the students become more proficient. Guided practice is critically important to many effective instructional programs, including those targeting mathematical problem solving, written expression and word recognition skills.

Guided practice is an important way to prevent students from forming misconceptions. Some students may come to the task lacking in prior knowledge and may be overwhelmed by the complexity or amount of new information. Other students may have limited working memory capacity or poor language skills and, thus, also will struggle to process the information that is presented. Guided practice helps students understand and clarify task expectations and facilitates their ability to link new knowledge with existing concepts.

1. This section adapted from Expert Panel on Literacy and Numeracy Instruction for Students with Special Education Needs, *Education for All: The Report of the Expert Panel on Literacy and Numeracy Instruction for Students with Special Education Needs, Kindergarten to Grade 6* (Toronto, ON: Ontario Ministry of Education, 2005), p. 63. © Queen’s Printer for Ontario, 2005. Adapted with permission.
2. Ibid., pp. 64, 65.

Guided practice can include different levels of support. For example:

1. *The students and the teacher work together* on a particular learning task. Students can contribute to the task (for instance, solve a particular step of a math problem or complete a section of the graphic organizer), but they are not required to perform the entire task by themselves. As the teacher guides the practice she offers verbal directions as well as demonstrating the task. The teacher also may provide written and/or pictorial directions that students can use independently for reference.
2. *Students work in small groups or with a partner.* When students have the preliminary skills and confidence to begin to practise the task more independently they work on the task collaboratively with a partner or small group. The teacher continues to provide supportive feedback.
3. *Students practise independently.* Practising new skills and concepts on their own, and in various contexts, promote mastery and automaticity. The teacher continues to provide supportive feedback and helps students develop strategies to begin to self-evaluate and generate their own feedback.

Memory prompts and supports

Memory difficulties often go hand-in-hand with learning difficulties. Common difficulties related to short-term or working memory include problems:

- recalling information despite repeated instruction and review
- keeping track of their belongings
- remembering daily routines despite regular exposure
- recalling facts and procedures, such as new vocabulary words, specific content information or mathematical procedures.

Most students with learning difficulties will benefit from instructional practices such as the following, which prompt and support memory.

- **Present concepts concretely.** Real-life examples add meaning and relevance that aid learning and recall. Concepts presented in familiar or authentic contexts are easier to learn and retain.
- **Use familiar language to introduce new concepts.** Encourage students to connect their previous knowledge to new learning.
- **Present the same information more than one way.** For example, when presenting new information orally, write the main points on the board.
- **Incorporate hands-on learning experiences and demonstrations.** Students learn more effectively when they try out new information and skills in a variety of settings.

- **Provide multisensory memory cues.** For example, to teach new reading vocabulary, include auditory, visual and kinesthetic cues. Review sound-symbol associations by:
 - saying the name of the letter
 - looking at the letter paired with a picture that starts with the letter
 - tracing the letter on the desk, in the air or on your arm.
- **Use visual cues to introduce new concepts or review content.** For example, use colour-coding, a sequence of photos or drawings, or a flowchart.
- **Use auditory and kinesthetic cues in combination.** For example, combine songs with movement. Music and physical routines linked to learning facts can help students memorize faster and act as a cue for retrieving specific information.
- **Provide regularly scheduled reviews of procedures and concepts.** For example, start each day by reviewing previously learned skills and ideas. Then present new skills and ideas. Before students leave for the day, review the new information.
- **Teach students to make lists of reminders regularly.** Note dates and assignments on a posted calendar. Build procedures into the day for recording information in daytimers and homework agendas. Tape simple cue cards of daily class routines on student desks.
- **Provide memory aids for frequently used information.** For example, high-frequency spelling words can be written on a file card and taped inside a binder. Schedules should be posted on the board and students can have personal copies in their desks or notebooks.
- **Teach students strategies for memorizing specific pieces of information.** For example, the “**fold-over**” strategy below can be used to learn second-language vocabulary or spelling words.

Fold-overs

1. Fold a paper to make four columns.



2. In the first column, copy target vocabulary words in English.
3. In the second column, write the French words for each of the vocabulary words.

4. Check your answers in the text. Correct any answers you got wrong and fill in words you did not know.
5. Fold back the first column so the English words are not visible. Now, practise translating the other way. Look at each of the French words you wrote in the second column and write the English translation in the third column. Check your answers against the original words in the first column.
6. Repeat this process to translate the words back into French in the fourth column. A complete practice page might look like this:

<i>mother</i>	<i>la mère</i> ✓	<i>mother</i> ✓	<i>la mère</i> ✓
<i>father</i>	<i>le père</i> ✓	<i>father</i> ✓	<i>le père</i> ✓
<i>brother</i>	<i>le frère</i>	<i>brother</i> ✓	<i>le frère</i> ✓

Strategy instruction

Independent and successful learners tend to use a broad array of strategies to solve problems and monitor their own learning. Most students with learning difficulties do not have effective learning strategies or do not know how or when to use these strategies. Providing students with instruction in “how to learn” enables students to become more efficient learners.³

Research suggests that instruction in the use of strategies is most effective when it is explicit, especially when working with students with learning difficulties.³

Consider the following guidelines for teaching a new strategy (Gaskins and Elliott 1991; Woloshyn, Elliott and Kauch 2001).³

1. Create and post a step-by-step visual to introduce the specific strategy.
2. Provide information about when and where to use the strategy.
3. Provide students with a convincing rationale for using the strategy, including a personal story of how you have used the strategy in your own learning.
4. Model using the strategy. Verbalize your thought process as you work through each step.
5. Provide students with multiple opportunities to practise using the strategy, guiding their attempts to do so until they can carry out the strategy independently.
6. Provide students with feedback and evidence of strategy success.
7. Cue students to transfer the use of the strategy to other contexts.

3. These paragraphs adapted from Expert Panel on Literacy and Numeracy Instruction for Students with Special Education Needs, *Education for All: The Report of the Expert Panel on Literacy and Numeracy Instruction for Students with Special Education Needs, Kindergarten to Grade 6* (Toronto, ON: Ontario Ministry of Education, 2005), p. 65. © Queen’s Printer for Ontario, 2005. Adapted with permission.

This type of step-by-step strategy instruction provides an organizational structure that helps the student focus on carrying out the task rather than trying to think about what to do next while also trying to complete the task. With repeated practice and instruction that uses other effective instructional supports (e.g., teacher modelling, cueing), a student will begin to internalize the steps of the strategy and become a more independent and strategic learner.

To generalize the use of a particular strategy, it is important to help students understand how the strategy works for them. Encourage students to ask themselves the following types of questions.

- What parts of the strategy help me the most and why?
- What parts of the strategy are the hardest to do and why?
- How could I change the strategy to make it work better for me?
- How can I use the strategy for different kinds of tasks and in different kinds of situations?
- In what kinds of situations would this strategy *not* work?
- How can I remind myself to use this strategy?

In addition:

- have students give themselves feedback on their use of the strategy
- help students develop positive self-talk, which acknowledges that success is a result of effort and correctly using the strategy
- teach students to cue others to use the strategy and to give reinforcement when peers apply the strategy effectively.

Learning how to use strategies effectively requires time and motivation. Initially many students will require substantial time and extensive guidance and support to learn how to use the strategies effectively. With experience, including guided practice and feedback, students can learn to use strategies faster and more competently. Over time and with the gradual introduction of multiple learning strategies, students can develop repertoires of effective learning tools.

There are a wide variety of cognitive strategies to choose from, especially in the areas of reading comprehension, problem solving and test taking. Teachers need to choose appropriate strategies based on student learner profiles and student responses to instruction.

For sample strategies that are effective for students with learning difficulties, see the following Alberta Education resources.

- *Unlocking Potential: Key Components of Programming for Students with Learning Disabilities* (2003), pages 53–71, available at <http://education.alberta.ca/admin/special/resources/unlocking.aspx>.
- *Teaching Students with Fetal Alcohol Spectrum Disorder: Building Strengths, Creating Hope* (2004), pages 27–49, 51–71, 73–109, available at <http://education.alberta.ca/admin/special/resources/fasd.aspx>.

- *Focusing on Success: Teaching Students with Attention Deficit/Hyperactivity Disorder* (2006), pages 63–88, available at <http://education.alberta.ca/admin/special/resources/adhd.aspx>.

Graphic organizers

“Graphic organizers” (also called “key visuals”) are tools for gathering, organizing and displaying information in a visual format. Graphic organizers use words, pictures and graphic cues to help students generate ideas, record and re-organize information and see relationships. Venn diagrams, story boards and webs are all examples of types of graphic organizers.

Graphic organizers are not fill-in-the-blank exercises. They are interactive tools for constructing knowledge and generating understanding and new ideas. Graphic organizers:

- demonstrate not only what students are thinking, but also how they are thinking as they work through learning tasks
- provide a visual link between language and content
- organize information and explicitly develop ideas and the underlying relationships among those ideas
- lower the language demands for students who have difficulty with reading and writing
- reduce the load on short-term memory, allowing the student to focus on the information.

Many examples of graphic organizers can be found on Web sites such as <http://www.eduplace.com/graphicorganizer>.

Consider the following seven steps for teaching students how to use specific graphic organizers.

1. Introduce a new organizer by showing an example and describing its purpose and form.
2. Model how to use the organizer with easy or familiar material. Show your thinking by discussing the steps and how you decide which information to use aloud. Model the kinds of questions you would ask yourself.
3. Create opportunity for guided practice with relatively easy new material and have students complete the graphic organizer with a small group or with a partner. Stop the class at different points in the process and give feedback.
4. Build in time for reflecting by showing final products and discussing what worked and what did not work. Give students an opportunity to revise the information they are working with.
5. Give students multiple opportunities to practice using the graphic organizer. Some students may find it easier to work on a larger version of the tool; try enlarging the size by photocopying it on to 11x17 paper.

6. Encourage students to consider how the tool can be used in a variety of situations. Look for opportunities to use the tool with different types of materials and tasks and in different subject areas.
7. Encourage students to modify the organizers and construct their own variations for the tool.

Effective supports

The goal of instructional supports is to give students with disabilities the same opportunity to succeed as other students. Typically, supports will span all subject areas and instructional settings that the student is engaged in. They help ensure that the student can successfully access the curriculum and demonstrate knowledge, skills and concepts to the best of his or her abilities.

There are three general types of supports:

- **Environmental**—related to the resources, materials the student uses as well as the layout and use of classroom space (e.g., preferential seating, adaptive devices such as ramps or computer technology)
- **Instructional**—related to the way information and concepts are presented or practised (e.g., providing alternative reading materials, copies of notes, small group instruction)
- **Assessment**—related to how students demonstrate their knowledge and understanding in the classroom and in testing situations (e.g., extra time to complete tasks, option of providing oral response, rest breaks, assessment materials in alternate formats such as Braille).

There can be an overlap in these types; for example, it is possible that a specific support could be both environmental and instructional, and also could affect assessment. Tools 1 and 2 at the end of this chapter provide organized lists of effective supports.

The process of selecting effective supports is grounded in good instructional decision making. Teachers play a key role in helping students identify and use supports effectively. Similarly, parents, students and other members of the learning team have a role in selecting, monitoring and evaluating the use of supports. Choosing appropriate supports involves asking systematic questions about individual students, such as the following.

- What helps this student learn or perform better?
- What does this student say about what helps him or her learn or show what he or she knows?
- What do this student's parents say about how their child learns?
- What gets in the way of this student demonstrating skills and knowledge?
- What supports and strategies has this student been taught to use? What is working successfully for this student now? What is not working or failed to work in the past?

Understanding some of the common barriers to the effective use of supports (sometimes called *accommodations* in the literature) is an important starting point. Common barriers include the following.

- **Misunderstanding the purpose**
Parents, students and school staff (and sometimes other students) can perceive that particular supports give students with disabilities an unfair advantage over other students. In reality, appropriate supports give the student the same opportunity as other students. Parents and school staff also may believe that supports replace the need to acquire or develop basic skills. It is important to balance the use of supports with the teaching and practise of basic literacy, numeracy and study skills so that students can develop these skills to their fullest potential.
- **Selecting supports that are not appropriate**
School staff often report having difficulty translating information from specialized assessments into selecting appropriate supports. As a result, there is a tendency to overrely on the same basic supports for all students with particular kinds of disabilities, rather than individualizing the supports to match the specific learning needs and strengths of the student. Different students benefit from different kinds of supports.
- **Not involving the student in the process**
School staff often report difficulty knowing how to meaningfully involve students in the decision-making process. However, research indicates that students benefit most from supports when they participate in the selection process. Often a student, who would benefit from support, does not make full use of it because he or she is self-conscious about doing things differently than peers. In a differentiated classroom, with all students using varied supports, there is likely to be less stigma surrounding individual supports, even if no other students are using a particular support.

Involving students in the selection process provides opportunities for them to learn about and become comfortable with how they learn. It also will help them become better advocates for themselves in future learning situations.

- **Using supports inconsistently**
When supports are not used consistently, it is difficult to determine if they are helping students. Also, students need time and opportunities to learn how to use supports and strategies effectively in a variety of situations, not just on major assignments or exams.

- **Overusing supports and possibly reducing expectations**
When too many supports are used, particularly at the elementary level, it can reduce expectations for student learning. For example, always providing a scribe might limit opportunities for the student to develop skills and confidence in writing.

There are several important considerations related to the selection, use of and monitoring of effective instructional supports.

- **Base decisions on an understanding of student strengths and areas of needs**

In addition to identifying student needs, identify student strengths and learning preferences to determine appropriate supports. Talk with students about what helps them learn better. Consult with parents about what they do to help their child complete tasks at home. The following chart shows an example of how learning strengths could be used to select supports for students with memory difficulties.

Sample supports for students with memory difficulties	Consider those supports for students who learn best by:		
	seeing	hearing	doing
• Give one instruction at a time.		x	
• Build routines into the day for recording information in daytimers or assignment books.	x		x
• Provide written memory prompts for frequently used information such as high-frequency spelling words or schedules.	x		
• Use visual cues, such as colour-coding, photos, flowcharts or charts	x		
• Use auditory and kinesthetic cues in combination. Combine songs with movement.		x	x
• Provide regularly scheduled reviews of procedures and concepts (e.g., review previously learned skills and ideas at the start of each day, review new information at the end of the day).		x	

Sample support for students with memory difficulties	Consider those supports for students who learn best by:		
	seeing	hearing	doing
<ul style="list-style-type: none"> Make lists of reminders regularly, and note dates and assignments on a calendar. 	x		x

Select supports and strategies that are the least intrusive for students. If possible, avoid supports that isolate students from peers or draw unnecessary attention.

- **Use a collaborative approach**

Educate parents and students about the benefits of using supports and how the supports may be adapted for use at home and in the community.

Involve relevant specialists in selecting appropriate supports based on their knowledge of student strengths and needs, and the demands of the setting.

Ask students about their preferences regarding supports; respect their opinions and attitudes. If the student is not comfortable with a support, it is important to revisit his or her strengths and needs, and then brainstorm alternate supports that the student will commit to trying for a period of time.

- **Use support consistently and monitor student performance**

Prioritize the introduction of support if more than one is to be used. Let students become familiar with one support before introducing another.

Consult with students about the use of supports after they have tried them for a period of time. Compare student performance before and after.



Assistive technology

“For people without disabilities, technology makes things easier. For people with disabilities, technology makes things possible.”

– National Council on Disability

Assistive technology for learning (ATL) is the devices, media and services used by students with physical, sensory, cognitive, speech or learning disabilities to actively engage in learning and to achieve their individual learning goals. ATL assists students in performing functions related to learning that would otherwise be difficult or impossible to accomplish independently.

ATL is different from educational or instructional technology. Educational technology is generally used by all students; ATL is more specialized and allows access to learning for students with barriers due to their disabilities. However, the technologies may overlap. Some ATL is beneficial for all students. For example, text-to-speech software could benefit all students who are learning to write. Likewise, students with disabilities may benefit from educational technology such as reading instruction software, but they also may need assistive technology such as a specialized keyboard or touch screen to successfully access these programs.

Areas where ATL may reduce learning barriers for students with disabilities include, but are not exclusive to:

- printing and handwriting
- reading
- expressive writing
- studying
- mathematics
- computer access
- vision
- hearing
- communication.

ATL has a continuum of tools ranging from low-tech to high-tech. Some examples are listed below. There may be an overlap between what is typically considered education technology and what is considered assistive technology.

Low tech options:

- raised-line paper
- alternate writing tools; e.g., magnetic letter, alphabet stamps, magnetic words
- materials to support memory and organization; e.g., highlighting pens, sticky notes

Mid-tech options:

- voice recorders
- calculators
- talking spell checkers
- dedicated word processors.

High-tech options:

- specialized software such as word prediction, text-to-speech
- dedicated communication devices
- specialized computer hardware such as touch screens, refreshable Braille display.

Many students with disabilities require both low-tech and high-tech solutions to be successful learners. The general rule is to begin with the lower-tech solutions and progress to more complex technologies, only if the low-tech options do not adequately reduce barriers to learning. For example, the best solution for a student whose handwriting is difficult to decipher might be a portable word processor with memory, rather than the more costly laptop computer.

Choosing which ATL solution would be most appropriate for an individual student is an ongoing process that involves exploring alternatives, gathering information and setting up opportunities for students to try potential ATL solutions across learning environments. A standard set of questions, such as the “SETT framework”,⁴ developed by Joy Zabala, can be a helpful tool for gathering and organizing information. The SETT framework considers the student, the learning environment, the learning tasks, and then the tools needed by the student to address the tasks.

The student

- What does the student need to do (that he or she is unable to do now and that ATL may be able to support)?
- What are the student’s unique learning needs?
- What are the student’s current abilities and strengths?

The environment

- What materials and equipment are currently available in the learning environment?
- What is the physical set-up?
- What is the instructional arrangement? Are there likely to be changes?
- What supports are available to the student?
- What resources are available to the school staff working with the student?

4. Adapted with permission from Joy Zabala, “The SETT Framework: Critical Areas to Consider When Making Informed Assistive Technology Decisions,” *The 2Learn.ca Education Society*, November 1995, <http://www.2learn.ca/institute/institute2006/handouts/SETTshortpaper.pdf> (Accessed March 9, 2009).

The **tasks**

- What activities take place in the environment?
- What activities support the student's learning?
- What are the critical elements of the activities?
- How might the activities be modified to accommodate the student's unique learning needs?
- How might technology support the student's active participation in those activities?

The **tools**

- What low-tech, mid-tech and high-tech options should be considered for a student with these needs and abilities doing these tasks in these environments?
- What strategies might increase student performance?
- How might the tools be tried out with students in the environments in which they will be used?

For more information on using the SETT framework, evaluating ATL solutions and creating an implementation plan see “Chapter 9: Infusing Assistive Technology for Learning into the IPP Process” in Alberta Education’s *Individualized Program Planning* (2006) at <http://education.alberta.ca/admin/special/resources/ipp.aspx>.

For additional information on assistive technology see *Chapter 6: Leveraging Technology*.

Tool 1: General Supports for Students with Disabilities

Name _____ Date _____

Completed by _____

Environmental

- Seat student near teacher
- Seat student in an area with minimal distractions
- Seat student near a positive peer model
- Stand near student when giving instructions
- Use a sound-field system
- Provide access to study carrel
- Use a desktop easel or slant board to raise reading materials
- Allow student to move around the classroom
- Make materials self-correcting
- Highlight important concepts and information and/or passages
- Prepare recordings of reading/textbook materials, tasks
- Provide an extra textbook for home use
- Provide graph paper or large spaced paper for writing
- Allow use of personal word lists, cue cards
- Increase use of pictures, diagrams, concrete manipulators
- Increase print size in photocopying
- Provide a visual summary of the daily schedule
- Other _____

Instructional

- Vary difficulty of instructional material
- Vary amount of material to be learned
- Vary amount of material to be practised
- Vary time for practice activities
- Use advance organizers and graphic organizers
- Provide an outline or study guide
- Use assignment notebooks or homework checklists
- Repeat directions or have student repeat directions
- Shorten directions
- Highlight instructions
- Pair written instructions with oral instructions and/or visuals/picture cues
- Reduce number of tasks required in assignments
- Break long-term assignments into shorter tasks and develop a schedule for completing each task
- Use strategies to enhance recall; e.g., cues, cloze
- Accept dictated or parent-assisted homework assignments
- Provide extra assignment time
- Provide models of written work or other assignments to guide students; e.g., sentence, paragraph, book report, short story, poem, essay

Tool 1: General Supports for Students with Disabilities (continued)

Instructional (continued)

- Permit student to print
- Provide a student buddy for reading
- Provide access to peer- or cross-aged tutoring
- Provide time with a teacher assistant to assist with organizing or reviewing information and concepts
- Provide nonverbal reminders for student to stay on task
- Provide immediate positive reinforcement for behaviour; e.g., verbal praise, tangible reinforcers, notes home, progress charts
- Implement self-monitoring systems so student takes responsibility for own behaviour
- Other _____

Assessment

- Adjust the appearance of the assessment tool; e.g., margins, spacing
- Adjust the type of tasks (T/F, multiple choice, matching)
- Provide additional cues or prompts such as cloze and word lists
- Vary how assessment is administered; e.g., small groups, individual
- Record test questions
- Reduce number of items or select items specific to current ability level
- Give extra time
- Permit rest breaks during tasks
- Adjust readability of text
- Allow alternative formats such as webs or key points in place of essays or long answers
- Read questions aloud
- Allow oral response
- Practise taking similar questions or assessment tasks
- Other _____

Tool 2: Sample Academic and Instructional Supports for Students with Disabilities

Name _____ Date _____

Completed by _____

Reading Difficulties	Written Expression Difficulties	Fine and Gross Motor Difficulties
<ul style="list-style-type: none"> <input type="checkbox"/> Use less difficult/alternative reading material <input type="checkbox"/> Identify/define words prior to reading <input type="checkbox"/> Reduce amount of reading required <input type="checkbox"/> Allow alternative methods of data collection (dictation, interviews, fact sheets) <input type="checkbox"/> Enlarge text of worksheets, reading material and tests <input type="checkbox"/> Limit words on a page <input type="checkbox"/> Extend time to complete assignments <input type="checkbox"/> Read directions several times at start of assignments <input type="checkbox"/> Emphasize important terms and clarify meanings <input type="checkbox"/> Provide additional repetition and guided practice of directions, skills and concepts <input type="checkbox"/> Use assistive technology; e.g., text-to-speech software 	<ul style="list-style-type: none"> <input type="checkbox"/> Reduce volume or requirements for written work; e.g., by accepting an outline or point-form notes <input type="checkbox"/> Break long-term assignments into manageable tasks with a schedule for completing tasks <input type="checkbox"/> Extend time lines for completing assignments <input type="checkbox"/> Offer alternative assignments <input type="checkbox"/> Allow student to work on homework at school <input type="checkbox"/> Encourage use of word processor <input type="checkbox"/> Waive spelling, punctuation and paragraphing requirements <input type="checkbox"/> Use assistive technology; e.g., word processor, spell check device, grammar check device, text-to-speech software 	<ul style="list-style-type: none"> <input type="checkbox"/> Use assistive and adaptive devices (slant boards/desktop easels) to display written material <ul style="list-style-type: none"> – pencil or pen adapted in size or grip diameter – alternative keyboard – portable word processor <input type="checkbox"/> Set realistic and mutually agreed-upon expectations for neatness and organization <input type="checkbox"/> Reduce or eliminate the need to copy from a text or board <ul style="list-style-type: none"> – provide copies of notes – permit student to photocopy a peer’s notes – provide carbon/NCR paper to a peer to allow a duplicate copy of notes to be made <input type="checkbox"/> Extend time to complete assignments <input type="checkbox"/> Alter the size, shape or location of the space provided for answers <input type="checkbox"/> Accept keyword responses instead of complete sentences <input type="checkbox"/> Allow student to type answers or to answer orally instead of in writing



This tool adapted from Calgary Learning Centre (Calgary, Alberta, 2002). Used with permission of the Calgary Learning Centre.

Tool 2: Sample Academic and Instructional Supports for Students with Disabilities (continued)



Attention Difficulties	Memory Difficulties
<ul style="list-style-type: none"> <input type="checkbox"/> Provide alternative seating <ul style="list-style-type: none"> – near teacher – facing teacher – at front of class, between well-focused students, away from distractions <input type="checkbox"/> Provide additional or personal work space (quiet area for study, extra seat or table, “time-out” spot, study carrels) <input type="checkbox"/> Permit movement during class activities and testing sessions <input type="checkbox"/> Provide directions in written form <ul style="list-style-type: none"> – on board – on worksheets – copied in assignment book by student <input type="checkbox"/> Set time limits for specific task completion <input type="checkbox"/> Extend time to complete tests and assignments <input type="checkbox"/> Use multiple testing sessions for longer tests <input type="checkbox"/> Use place markers, special paper, graph paper or writing templates to allow student to maintain position better or focus attention <input type="checkbox"/> Provide cues; e.g., arrows and stop signs on worksheets and tests <input type="checkbox"/> Provide a quiet, distraction-free area for completing assignments and tests <input type="checkbox"/> Allow student to wear noise buffer device such as headphones to screen out distracting sounds <input type="checkbox"/> Provide checklists for long, detailed assignments 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide a written outline <input type="checkbox"/> Provide directions in written form <input type="checkbox"/> Provide a specific process for turning in completed assignments <input type="checkbox"/> Provide checklists for long, detailed assignments <input type="checkbox"/> Read and discuss standard directions several times at start of exam <input type="checkbox"/> Provide cues; e.g., arrows and stop signs on worksheets and tests <input type="checkbox"/> Allow student to use reference aids such as dictionaries, word processors or vocabulary cue cards