



British Columbia

# Making It Work: Effective Implementation of Assistive Technology

First Edition

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Creating Student  
Opportunities

Making It Work: Effective Implementation of Assistive Technology  
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#### Acknowledgements

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This guide was prepared using some of the many excellent examples of implementation tools that are available from various Assistive Technology groups and organizations around North America. For a complete listing of these resources, please refer to the Resources chapter in the guide.

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# Introduction

## About SET-BC

Special Education Technology - British Columbia (SET-BC) is a provincial government initiative established to assist school districts and group 1 and 2 independent schools in educating students with physical disabilities, visual impairments or autism through the use of technology.

SET-BC's mandate is:

- to lend assistive technologies to facilitate students' access to educational programs, and
- to assist school districts in providing the necessary consultation and training for students and educators in the use of these technologies.

SET-BC services to school districts include:

- consultation, planning and follow-up for school based teams
- loan and maintenance of assistive technology
- training
- provision of resources and information

SET-BC consultants are based in seven Regional Centres around the province, providing community based services to all BC school districts. Each district has a SET-BC District Partner who can provide information on how services are provided for eligible students. For more information and resources on assistive technology, check SET-BC's web site at [www.setbc.org](http://www.setbc.org).

### The SET-BC Regional Centres

- Region One - Victoria
- Region Two - Vancouver
- Region Three - Vernon
- Region Four - Kimberley
- Region Five - Prince George
- Region Six - Prince Rupert
- Region Seven - Dawson Creek



## Using This Guide

The purpose of this document is to provide educators with a guide for successfully implementing a wide variety of assistive technologies with students with special needs.

Each section of the guide contains the following:

1. **Introduction** – The introduction describes the process and gives the rationale for why this step is important in the implementation process.
2. **Tools** – this area describes tools and strategies that could be used in the implementation process and gives specific examples from the field.
3. **Case Study** – This area describes students and their teams in British Columbia who are effectively implementing assistive technology.

We have included samples of specific implementation tools that are available from a number of different AT organizations. These tools are only representative of the many tools and strategies that are available – they are not meant to be exclusive and, while we have seen them used very successfully, other examples, not included here can be used just as successfully. The internet link for each tool listed is included for those wishing to view the complete resource. Because the students who are central to the implementation process are individual and unique, school based teams should use whichever tools are appropriate to the student and situation. A complete list of Resources and References is included at the end of the guide for those interested in finding more information on AT implementation tools and strategies.

This guide is intended to be used as a resource for school based teams and district staff who are implementing assistive technology with their students. It will also be available as an interactive and downloadable document from the SET-BC website ([www.setbc.org](http://www.setbc.org)).

## Effective Implementation of Assistive Technology

Effective implementation of assistive technology can be a very complex process that may take place over the student's entire school career and on into adulthood. The implementation process is actually independent of the specific technologies being put into place. Truly successful integration of the technology into a student's educational program does not depend on what software and hardware may be introduced but, instead, depends on careful and thoughtful attention to the various steps from initial assessment or information gathering through to final outcome reporting.



Successful AT implementation is:

- collaborative
- systematic
- recursive
- flexible, and
- based on curricular goals and student needs

The literature on assistive technology implementation reports an alarmingly high rate of AT abandonment. Many causes of abandonment are described, including inappropriate matching of technology to student needs or goals, ineffective introduction of the technology into the student's program, poor or ineffective staff training, and missing or poorly established measurable AT outcomes. These and other problems could be avoided or minimized by taking the time to develop and follow an effective AT implementation plan.

Consider the following scenario...

*Keith is a 12 year old student with autism spectrum disorder. He was having a great deal of difficulty completing written assignments by hand. His family felt he needed a laptop computer to motivate him to stay in school for full days and to complete academic work. His school based team acquired a laptop computer and, because the teacher had seen Intellitalk II ([www.intellitools.com](http://www.intellitools.com)) used with a primary student, he felt it might be a good software choice for Keith. His team also thought he could use the laptop to search the internet and play educational games.*

*When the laptop arrived, the team discovered it was not compatible with the school network and struggled for several months to have the district IT department solve the connection problem. This never occurred and the family, becoming frustrated, provided the school with a wireless router. When the laptop was finally working, the team wanted to receive training on his software but was not approved for release time. The team decided to include Keith in the training sessions. When the training was arranged, only*

*the Special Ed Assistant and Keith were selected to attend. During the training, it became obvious that the team had not identified the specific IEP goals that the technology would be addressing. In addition, the SEA was not sure which classroom activities Keith would be joining in the coming months. The SEA managed, while simultaneously dealing with Keith's behavioural issues, to learn the very basic features of the software.*

*Back at the school, the SEA quickly discovered that she did not have any time during the school week to plan or prepare for using the software in Keith's program. Anxious to have Keith use the technology, the team introduced the laptop to him on a Friday afternoon. He was not prepared and had a very bad reaction to the software in particular. He rejected both the software and laptop during that first session. Repeated attempts to have him use the laptop failed. A new SEA was eventually reassigned to him and was expected to learn the technology on her own. The laptop sat locked in a cupboard at the back of the room for over a year. At that point, Keith's IEP team decided that assistive technology was not an appropriate tool for him and the laptop was transferred to another student.*

*Keith is now falling farther and farther behind and his behavioural issues are escalating. His team is looking forward to him transferring to the high school in the fall.*

Contrast that scenario with the following...

*Caitlyn is an energetic and personable 10 year old attending Grade 5 at a large inner city school. As a result of her cerebral palsy, she has fine and gross motor control difficulties making it difficult for her to keep up with her classmates when completing written tasks. Assessments have shown that her reading comprehension and concept development are at grade level but her physical challenges often make it difficult for her to demonstrate her learning.*

*When Caitlyn moved into Grade 4, her IEP team felt that she needed extra support in accessing her program because her physical challenges made it more and more challenging because the text load was increasing. After assessing her written output, they explored various solutions and decided that technology could provide a tool to support her written output. The class had several computers located at the back of the classroom that were being used for educational games and internet access. Based on her specific IEP goals, the team began by having her type her written work on one of the classroom computers. They immediately noted that she had difficulty using the standard keyboard and mouse due to her limited motor abilities. Based on recommendations from the district OT, the team trialed a number of different mouse and keyboard alternatives and found that she was most effective and preferred a joystick mouse and Big Keys keyboard. Even after her access to the computer was improved, it still took her a long time to type in a regular word processor. After looking at the curriculum and specific written output goals, the team installed Clicker 4 ([www.cricksoft.com](http://www.cricksoft.com)) on her computer to make it easier for her to create the text that would help demonstrate her learning. The last few months of Grade 4 were spent with the SEA and classroom teacher training on the use of the program, setting up the program options to suit her needs and preferences and on supporting Caitlyn's mouse, keyboard and computer skill development. During that time, the team kept records of her written output with and without technology as well as took pictures of her assistive technology set up. Work*

*samples, anecdotal comments, and other records of AT use were put in a binder to be used for transitioning to Grade 5.*

*Caitlyn and her Grade 4 team met with her Grade 5 team during transition meetings in June. They discussed her use of the technology, the physical set up that would be required in her new classroom, and the training needs for her new team. The old SEA trained the new SEA two afternoons in June when the class was outside during Sports Day.*

*Caitlyn's SEA in Grade 5 now uses the first 20 minutes of every school day, when the class is involved in "Buddy Reading", to prepare any last minute Clicker 4 activities or to organize and prepare for upcoming themes or units of study. Caitlyn's desktop computer is located on a table right next to her desk so she can still see the front instructional area of the class but needs only to swivel to her right to use the computer. There is enough room at the table for a peer to join her when she is working with someone else. When the class is involved in writing tasks, like completion of a science lab write up, Caitlyn uses a pre-made Clicker 4 grid to complete the same task. Because her team has decided to capitalize on her strong auditory processing skills, Clicker 4 has been set for auditory feedback. She uses headphones to minimize any distraction to her classmates while she is writing. Her computer is connected to the school's network so she is able to print her work and hand it in just like everyone else.*

*Every Friday at recess, Caitlyn's SEA and classroom teacher meet to discuss her progress and use of the technology. During these short meetings, work samples are chosen and printed for inclusion in the implementation binder and to be sent home and assessment tools completed to be added to her ongoing IEP and technology implementation binder. In addition, the teacher's lesson plans for the upcoming week are reviewed and adapted for Caitlyn. Once a month, the SEA and Learning Support Teacher meet with Caitlyn to build her digital portfolio.*

*During her first term, student-led parent-teacher conference, Caitlyn proudly displayed examples of her written work and spoke enthusiastically about how her computer helped her "write all the things in [her] head".*

The difference between the two scenarios has very little to do with the type of technology being implemented. The difference is the implementation process that both teams undertook when implementing those technologies.

Caitlyn and her team are effectively implementing assistive technology in her everyday educational program. Effective assessment and planning for the use of technology took place, her team trialed a possible AT solution before making a final selection, team members took time to train on the use of the technology, time for planning, preparing and integrating the technology was creatively made available during the school week, and Caitlyn and her team review the use of the technology on a frequent and ongoing basis. The steps and strategies that Caitlyn's team has used to effectively implement Clicker 4 and access technologies provide a model for any team integrating any assistive technologies into a student's educational program.



## What is Effective AT Implementation?

Put simply, implementation of assistive technology is successful if it achieves the goals identified in the student's IEP and enables the student to be more successful in their school environment than without the technology. An effective AT implementation plan has the following steps...



### 1. Gather relevant information

The implementation process begins with collecting and gathering any relevant information that will be used to identify specific IEP goals that will be supported by technology and to inform the selection of assistive technology for trials or implementation.

### 2. Establish IEP goals

Referring to their established IEP, specific goals which could be supported through assistive technology as well as strategies for outcome evaluation are identified.

### 3. Conduct Assistive Technology Trial

Depending on the complexity of the goals and student need, as well as the familiarity of the team with the possible AT solutions, a variety of AT tools should be explored before a final AT solution is selected.

### 4. Identify AT solution

Based on the information gathered through assessments and AT trials, as well as the identified IEP goals, the AT solution that best matches student need to technology features is identified.

### 5. Develop Implementation Plan

Once the actual technology is identified, teams work collaboratively to create a plan which includes specific plans for physical set up and configuration of the equipment, team and student training, integration of the technology into the student's daily program, and assessment or evaluation tools that will be used to determine effectiveness of the AT solution.

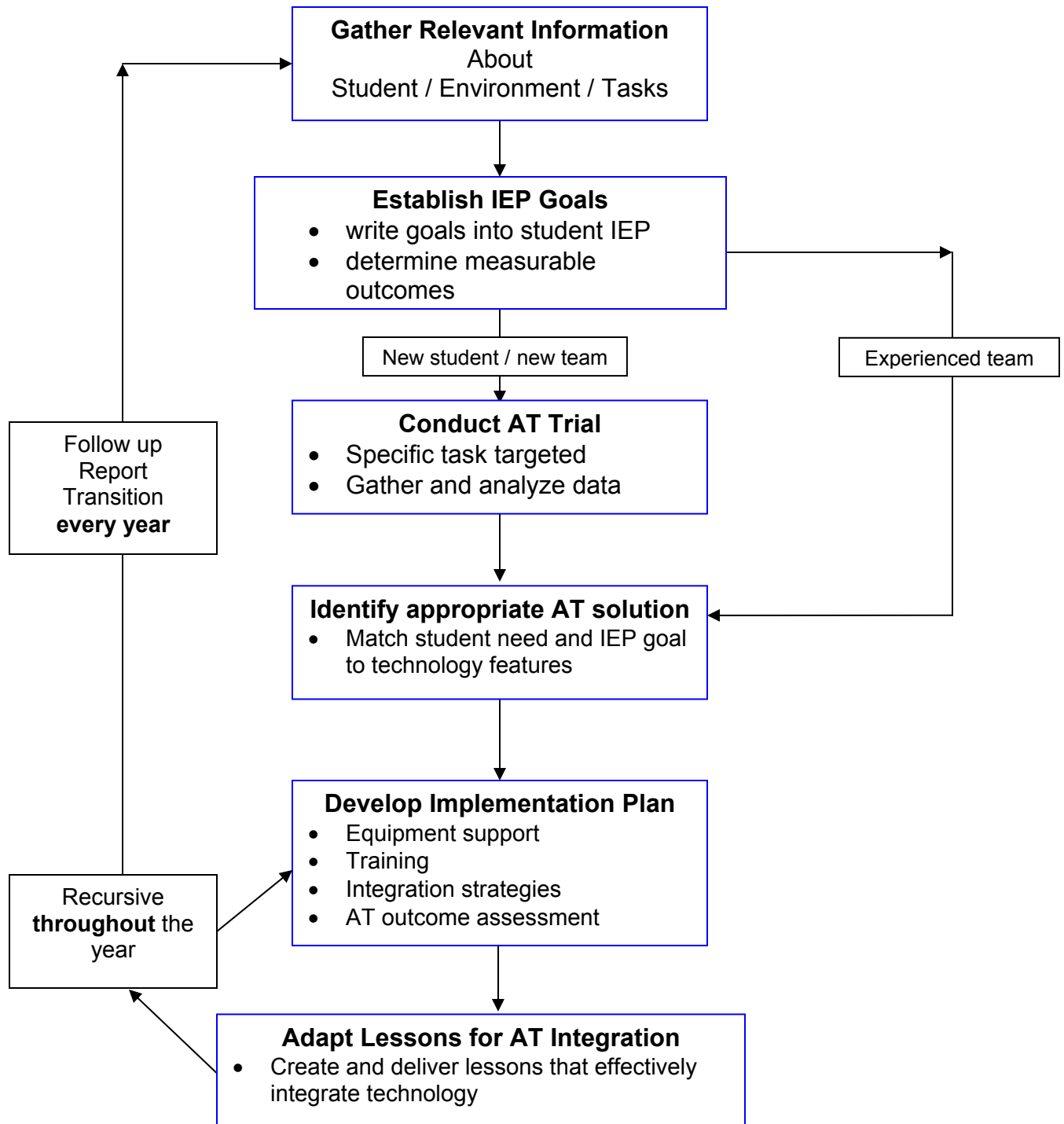
### 6. Adapt Lessons for AT integration

Following from the overall implementation plan, daily lesson plans are adapted to include the use of assistive technology to meet the curricular goals. AT outcomes, identified in the student's IEP are measured on an ongoing basis.

### 7. Follow Up and Plan Transition

The use of assistive technology requires frequent and ongoing review to ensure the AT solution remains appropriate to goals and student needs. Transition plans, in particular, are necessary to support a smooth transition between classes and grades.

## The AT Implementation Process



## Conditions that Foster Effective AT Implementation

Even if the AT implementation process is well established, successful and effective implementation of AT depends on several factors or conditions. These include:

### Student

1. Student is motivated to use assistive technology and has been involved, at their level, in the selection and implementation of the technology.

### Team

1. The team is motivated to work collaboratively to find and implement an effective AT solution for the student.
2. The team is able to articulate specific IEP goals that the technology will support.
3. The team understands the various components of an effective implementation plan and is willing to commit the time necessary for successful implementation (time for planning, creation of resources, integrating into the student's program, and assessment).
4. The team has access to the training resources needed to implement the technology.

### Environment

1. The school administration is supportive of the team's efforts to implement the AT solution.
2. The school and / or district IT department understands the role AT assumes in the student's educational program and supports the team's efforts to integrate the AT into the school's general technology plan.
3. The school setting has appropriate physical space to accommodate the AT solution.
4. Necessary auxiliary or peripheral technology is in place to support the specific AT solution.

### Technology

1. The technology features match the student's needs and curricular goals as effectively as possible.
2. The technology is readily available to the student when needed and is maintained in good working order at all times.



# Challenges and Barriers to Effective AT Implementation

The following challenges and barriers can make it very difficult to effectively implement assistive technology in a school setting. Some are more significant than others, and the more challenges or barriers present, the more likely the technology will be abandoned.

## **Student**

1. Student not motivated or interested in the AT solution that is put in place.
2. Student has not participated in the selection process.
3. Student has not been adequately trained or prepared to use the assistive technology.
4. Student needs are not addressable with technology (e.g. behaviour concerns).

## **Team**

1. Team does not have any time to plan for the use of technology, prepare necessary resources or materials, or train on the use of the technology.
2. Team is not technically ready to implement the technology (e.g. basic technology skill level not well developed).
3. Not all team members are involved or supportive of the AT implementation.
4. Team does not have a comprehensive implementation plan in place.
5. Team has not articulated specific IEP goals which will be supported with technology.
6. Team is not aware or does not make use of available AT resources.

## **Environment**

1. Necessary auxiliary or peripheral technology is not available in the school.
2. School administration is uninformed or not supportive of the team efforts to support AT implementation.
3. School setting does not have the physical space or equipment (e.g. work stations) to support the technology.
4. The school or district IT department is not involved in supporting the technology.
5. The necessary AT resources are not available (e.g. training opportunities)

## **Technology**

1. The features of the technology do not match the student and curricular goals.
2. The technology does not function well in the school environment (e.g. needs frequent repairs, is not maintained)
3. Technology is too complex to be effectively implemented in a reasonable timeframe.

## Team Roles

Decision making around a student's use of assistive technology requires the full involvement of the school team members. Gathering and sharing information from all members of the team, and combining knowledge and expertise through the process of planning, will lead to well informed and thoughtful decisions. These carefully made decisions will go a long way towards successful implementation of any assistive technology.



Key members of the school team for the AT implementation process include:

- student and parents
- classroom, Learning Support or District Support teachers
- Special Education Assistants
- District Support Staff  
(Occupational Therapist, Physiotherapist, Speech Language Pathologist, Behavioural Specialist, etc.)
- School and District Administration

It is important that this group of individuals create a collaborative working environment where all facets of the student's needs can be considered and addressed.

As with any group striving to make changes or implement programs, it is important to identify a team leader. It is often the case manager, but this person can be anyone who will take the responsibility for planning meetings, keeping records, setting goals, and ensuring action is taken. Without a team leader, the implementation process will not have a clear direction and individual or collected efforts may be wasted.

It may be preferable to choose a team leader who is directly involved with the student at the school level for more than one year at a time. Knowing and understanding the student's educational environments and how they change over time will be critical to the relevance and success of the assistive technology. The team leader can act as a facilitator for the group by bringing the combined knowledge and expertise of the team together, as well as by spearheading the development of the implementation plan.

Since implementation of assistive technology is a complex undertaking, to be effective, team members should agree on their specific roles in the process, specific procedures around the technology, and a shared or common record keeping procedure. Some teams opt to keep all information, observations, and data about the assistive technology implementation in an "AT Implementation Binder". This makes a handy tool for IEP and case review meetings and ensures that, when team members change, the student's use of the assistive technology can remain as consistent as possible.