Note to Presenter: This presentation is intended for people who are or will be involved in assistive technology (AT) decision-making and implementation. The contents of this module focus on planning for the use of AT devices and services that ARD Committees (IEP Teams) have determined to be needed for students with disabilities to participate in educational activities, work toward mastery of Individualized Education Program (IEP) goals, progress within the general education curriculum, and benefit from a free, appropriate public education (FAPE). Although the principles of AT implementation included in this session are directly related to the Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004), the processes and strategies discussed are generally appropriate for AT implemented under other legislation, such as Section 504 of the Rehabilitation Act. The information and processes included in this module are not specific to the state of Texas and can with little or no change across the United States and beyond.

Before you begin:
Read through all the materials to become familiar with the structure and sequence of this module. Print the handouts for participants from the TATN website including:
• PowerPoint Note-Taking Guide
• Supplementary Handouts for Participants
  • IDEA 2004 AT References
  • Quality Indicators in Assistive Technology (QIAT) for Implementation, and Evaluation of Effectiveness
  • Leveling the Learning Field (Threshold)
  • Using the SETT Framework to Level the Learning Field
  • Texas Implementation Planning System (TIPS)
  • TIPS Activity - William
Slides most closely connected with handouts have this graphic followed by the handout number in the upper left corner of the slide.

Supplement these materials with copies of operating guidelines, policies, or other documents that reflect the requirements and expectations in the customary environments of participants.
This training module was collaboratively developed by the Texas Assistive Technology Network (TATN), with leadership provided by Region 4 Education Service Center, and the Texas Education Agency. The collaborative partners gratefully acknowledge the work of Dr. Joy Zabala as the primary author and Gayl Bowser as a contributing consultant.

PROCEED TO THE NEXT SLIDE
Review the objectives of the session.

PROCEED TO THE NEXT SLIDE
This module builds on legal and practical information and processes that have been included in previous modules in the Assistive Technology in Texas School Series. If participants are unfamiliar with any of these topics, it is suggested that they read the speaker notes for the modules on legal issues, consideration, and evaluation that can be downloaded from the training modules section of the TATN website located at http://www.texasat.net.

An outline of AT in IDEA 2005 and a brief overview of the SETT Framework are included in the participant handout. More information on the SETT Framework can be located at http://www.joyzabala.com.

Refer participants to the above mentioned items in the participant handout.

PROCEED TO THE NEXT SLIDE
Sometimes, after consideration of a student’s need for AT during the development of the IEP or after an AT evaluation has been provided, AT devices and services are found to be required by a student in order to participate in and benefit from the educational program. When need is determined, the nature and extent of the AT devices and services required must be written into the IEP. After the IEP has been developed, it is time to integrate the AT into the student’s educational program and, of course, evaluate effectiveness so that implementation can be improved when data indicate that improvement is needed. Information gathered and analyzed at each step of AT service delivery informs what happens at the next step. Thus, as we plan for effective implementation, we will be looking briefly at how previous steps inform where we start and how we move forward.

PROCEED TO THE NEXT SLIDE
Using processes presented in the other TATN modules, such as the 4-Step Consideration Model and the Dynamic Assistive Technology Evaluation (DATE), we learned a great deal about the student who would use the technology, the environments in which the technology would be used, and the tasks for which the student would need the technology.

By organizing what we learned according to the SETT Framework, we were able to determine what devices, services, and supports would be needed by the student and others for the student to be successful.

PROCEED TO THE NEXT SLIDE
This graphic enables us to see how the SETT Framework helps us think through all phases of AT service delivery so that students with disabilities are able to reach the high expectations on a level learning field. In a moment, we will see how it illustrates thinking about implementation; but first, let’s have a quick look at the sequence for decision-making.

As we work up from the bottom of the graphic, the arrows help us recall that we gathered and analyzed information about the student, the learning environments, and the tasks involved in active learning and high achievement BEFORE making decisions about what devices and services were needed.

**PROCEED TO THE NEXT SLIDE**
As we plan for effective implementation, the sequence is somewhat different. Tools have been identified, so now we think about what we know about the student, and the environments, and decide how the student can learn to use selected tools to do the tasks required for active participation and educational achievement.

PROCEED TO THE NEXT SLIDE
We recall that there are many ways that a student might use tools. We know that we need to pay attention to all of them as we plan for effective integration of the technology and accompanying supports and services into the educational program of the student. On this slide, we see some of the important uses that we will want to keep in mind as we move forward with our implementation plan.

**PROCEED TO THE NEXT SLIDE**
As we saw on the previous slide, there are many purposes for which a student might use AT; but, people often have questions about the CENTRAL purpose and expected results of AT implementation in schools.

**PROCEED TO THE NEXT SLIDE**
The primary purpose of public education in the United States is to provide a free education to all students. In the case of students with disabilities, the educational program must also be appropriate to the student’s individual needs and abilities. In addition, it is also expected that all students will participate in and benefit from their education; thus in schools, our “bottom line” purpose for the use of AT is educational achievement and functional performance.

PROCEED TO THE NEXT SLIDE
Another question many people who are planning for AT implementation ask is if there are any “big ideas” that might be helpful for them to keep in mind. We will spend a little time on those “big ideas” before getting to the specifics of the planning process.

PROCEED TO THE NEXT SLIDE
As mentioned, student achievement is the critical outcome of AT implementation in educational settings. Effective AT implementation that leads to this outcome involves not only AT devices and services, but also may involve many instructional and therapeutic strategies and tools that are NOT specifically in the IEP as AT, but that support student needs and use of the AT. So, if you were not very involved in the consideration and evaluation of the student’s need for AT, you may want to spend some time reviewing the handout that explains what the Individuals with Disabilities Education Improvement Act of 2004 (IDEA 2004) says about AT.

Refer participants to the supplementary handout that includes information about IDEA 2004.

PROCEED TO THE NEXT SLIDE
Throughout consideration and evaluation, we have thought about and gathered information about functional areas of concern that present barriers to the student’s achievement. As we move to implementation, it is important that we think carefully about when and where those areas of concern occur so that we can be sure that implementation takes place at those times and in those places whenever possible.
Here is a list of some of functional areas, one or more of which might have been identified as an area of concern for which AT is needed. It is important to know the student’s present level of achievement or performance in each identified area at the beginning of implementation because the effectiveness of the AT implementation will show up in the way that the student’s achievement and performance changes on tasks for which the AT is needed.

**PROCEED TO THE NEXT SLIDE**
Although we are looking at what it takes to get started with AT implementation in this module, we must also keep in mind that each step of the implementation yields evidence of the level of success of the AT use and, possibly, evidence of the need for changes. What we are looking at is continuous improvement in the student’s progress whenever and wherever the AT is needed and used.

**NOTE:** In Texas, the IEP Team is referred to as the Admission, Review, and Dismissal (ARD) Committee.

**PROCEED TO THE NEXT SLIDE**
This big idea brings us to the main focus of this module…the development of a collaborative plan to guide effective implementation. A key point of a well-developed plan in which the use of AT is likely to make a difference in student achievement and performance is that that the plan be developed with the involvement of the people who will be involved in the activities in which the AT is or will be used.

PROCEED TO THE NEXT SLIDE
Many people, who want to make their initial plans as useful as possible, ask if there are any guidelines for what should be addressed in an implementation plan.

PROCEED TO THE NEXT SLIDE
Fortunately, there are quality indicators that research has shown to be important to the implementation and evaluation of effectiveness of AT services. These can be very helpful to teams who are getting started or improving AT implementation.

Refer participants to the Quality Indicators for Assistive Technology Services handout.

PROCEED TO THE NEXT SLIDE
As we have discussed, a plan is critical. As we continue through this module, we will be looking at how consideration and evaluation data help determine the starting place for the plan.

We have learned that sharing responsibilities is critical if successful implementation is to take place when and where it needs to happen. When implementation is dependent on only one person, success over time is much less likely than when a team of collaborative implementers are involved.

We have also learned that although effective implementation may START within a single activity or a single location, it moves as quickly as possible to the natural times, places, and activities in which use of the AT is expected.

**PROCEED TO THE NEXT SLIDE**
We have also learned that effective AT implementation does not mean that the AT is used for EVERYTHING or in every instance. We know that one of the things students need to learn is when to use AT and when other strategies are more effective. Thus, effective implementation encourages the use of multiple means of participation and expression. This quality indicator is well-aligned to the principle characteristics of Universal Design for Learning which are briefly discussed on the next slide.

Training, not just for the student, but also for the staff, the family and others, is a part of implementation, as is the management and maintenance of materials and equipment. If the AT is not working or the people who are supposed to support the student do not know how to use it, it is very unlikely that implementation will be successful.

And, finally, we have learned that it is important to make changes in the implementation if data indicate that the student is not progressing appropriately.

**PROCED TO THE NEXT SLIDE**
Universal Design for Learning (UDL), a term coined by the Center for Applied Special Technology (CAST), encourages curriculum developers and instructors to thinking about and planning for multiple ways that students can gain information, demonstrate learning, and be engaged in learning processes. More information about UDL and how its principles can be applied can be found at http://www.cast.org.

PROCEED TO THE NEXT SLIDE
As we move from quality Indicators for implementation to quality indicators for evaluation of effectiveness, this guiding principle, written by the Arkansas Tech Act Project, underscores the cyclical nature of assessment and implementation processes. It helps us see the importance of thinking up front about how effectiveness will be determined as the implementation plan is developed rather than trying to figure out later whether or not the AT implementation has made the difference that it was expected to make.

PROCEED TO THE NEXT SLIDE
Quality indicators for evaluation of effectiveness help us think about what it will take to convince ourselves and others that AT implementation is making a difference, how to gather supporting evidence, AND how to determine when changes are needed. Again, we see the importance of clearly defined, shared responsibilities for gathering and analyzing data that is related to how the student is using AT to address one or more goals.

Just as we saw that implementation is to take place across environments and activities, we see that it is important to decide what qualitative and quantitative measures will be used to determine effectiveness in each of the environments and activities in which AT is used.

PROCEED TO THE NEXT SLIDE
Analyzing the data that is collected is critical to determining what changes in student achievement and performance have and have not taken place. Analysis includes not only determining what supports are working and should be continued, but also what is not working, what barriers still remain, and what changes are required. Certainly, there is the expectation that the needed changes, as indicated by data, will be made in a timely manner. And, finally, as in all phases of AT service delivery, evaluation of effectiveness is an ongoing process that informs improvement in implementation - not something that can be “finished”.

PROCEED TO THE NEXT SLIDE
And now, with those big ideas and quality indicators in mind, we are better able to address the “how to’s” of developing an effective implementation plan. Where to start?
Let’s start with the information we have gathered in the earlier stages of AT service provision... consideration, evaluation, the IEP, and what is expected to happen in educational environments.

PROCEED TO THE NEXT SLIDE
Where to start?
Let’s start TIPS – the Texas Implementation Planning System that will help us organize and use the information we have gathered in the earlier stages of AT service provision and work through a series of steps that lead to the development of an effective implementation plan that includes evaluation of effectiveness.

*Direct participants to the TIPS Planning Guide and the TIPS Summary in their handouts.*

PROCEED TO THE NEXT SLIDE
In order to plan for implementation that makes a measurable difference, we need to know where the student is now. Revisiting the information that has been gathered and organized with the SETT Framework can help us clearly establish the baseline from which implementation begins or continues and from which progress – or lack thereof – will be measured. Review the information that has been gathered about the student, the environments and the tasks that guided the selection and acquisition of the tools – remembering that tools are AT devices and services, as well as other supports and strategies that will be used during the implementation.

PROCEED TO THE NEXT SLIDE
Review the team’s shared knowledge of the student. Is the information still accurate? Is there anything that needs to be added Deleted? Changed? This information will be important when planning the USE of the assistive technology. The information on this slide will help you during your review.

PROCEED TO THE NEXT SLIDE
Review the team’s shared knowledge of the environments. Is the information still accurate? Is there anything that needs to be added? Deleted? Changed?

In order for the AT implementation to increase the student’s achievement and functional performance, we must be sure that the environments are accessible and supportive. Some AT services, additional information, training and other tools will most likely be needed to develop supportive, accessible environments in which the student will use the AT tools.

PROCEED TO THE NEXT SLIDE
Review the team’s shared knowledge of the tasks. Is it still accurate? Is there anything that needs to be added? Deleted? Changed? Having a clear shared understanding of the tasks is very important because it is the tasks that are difficult or impossible for the student that will be the main targets of the implementation. Changes in how the student does the tasks are likely to be a main focus of the evaluation of effectiveness of the implementation.

PROCEED TO THE NEXT SLIDE
Everything that is needed by the student and others for the student to accomplish the tasks in the environments where they need to be done.

Review the tools that have been selected and acquired and will now be used to increase, improve, or maintain the student’s achievement and performance. As we think about tools, we need to keep in mind that we are thinking not only about those that have been selected for the student, but also those that are needed by others to support student success.

PROCEED TO THE NEXT SLIDE
Review the tools that have been selected to increase, improve, or maintain the student’s achievement and performance.

_Briefly review each bullet on the slide and explain acronyms as needed._

- **AT**=assistive technology
- **IT**=instructional technology
- **UDL**=Universal Design for Learning based on multiple means of representation, engagement, and response built into curriculum and instruction.
- **NIMAS**=National Instructional Materials Accessibility Standard related to the production and provision of digital text to qualified students with print disabilities caused by a visual or physical disability.

**PROCEED TO THE NEXT SLIDE**
Tools for Others

What tools are needed by others for the student to do the tasks in the environments in order to meet expectations

Training and support with:
• Decision-making
• Strategies
• Accommodations
• Modifications
• Collaboration

• Device integration
• Device operation
• Device management
• Service delivery
• Etc.

Review the tools that have been identified as needed by others who support the student. If training and support are needed, what has been identified as the scope of the content?

Briefly review each bullet on the slide and explain as needed.

PROCEED TO THE NEXT SLIDE
As was mentioned earlier, the main reason it is important to know where implementation begins is that implementation is CHANGE. The introduction of new tools creates or leads to change…

• Change in the student's participation, achievement, and performance;
• Change in the environments and what is expected of the people in them;
• Change in the tasks and how the student accomplishes them;
• And sometimes, through implementation, we find that change is needed in the tools themselves or in implementation strategies

PROCEED TO THE NEXT SLIDE
When change occurs as expected we are generally fine with that, but when it does not, a tool like Robert Garmston and Bruce Wellman’s Change = Map can help us understand why not and plan for what to do. We believe it can also be helpful in planning, so that we are sure that we attend to the A, the B, the C, and the X so that change WILL occur as planned.

*Review each part of the equation with the group.*

**PROCEED TO THE NEXT SLIDE**
Think of an experience when expected change did not occur. What was missing?

Take a few moments to jot down a time when a changed way of doing something did not occur even though it seems like a good idea to you. Using the Change = Map, analyze the situation and determine what was missing.

*Give participants 3 minutes or so to jot down ideas then have them exchange ideas with others at their table. If time permits, have 2 or 3 people share their incidents. Then continue...*

It is important to be aware of each of step of the Map because each one requires a different type of support and action if change is to occur. For example, it is of little use for a leader to provide the steps for getting from the current level of achievement to the desired level of achievement, if there is not shared dissatisfaction with the current level of achievement by the ARD Committee (home and school) and implementers.

**PROCEED TO THE NEXT SLIDE**
The fact that AT has been included in the IEP demonstrates that the ARD Committee is dissatisfied with the student’s level of achievement and performance without the AT and that they share the expectation that improvement will occur when AT is used. It is up to the implementers to make a plan that defines the practical steps that will lead to the expected outcomes.

PROCEED TO THE NEXT SLIDE
“How will identified tools be integrated into the student’s program?”

This brings us to the main question of this module.

PROCEED TO THE NEXT SLIDE
To facilitate the planning process, we will, basically, Re-SETT – a planning term coined by Gayl Bowser, Coordinator of the Oregon Technology Access Program – to specifically identify ways in which the Student, the Environments, and Tasks will change with the introduction of new Tools. Specifically, we will be looking at how the Tools identified and needed during consideration and/or evaluation–devices, services, strategies, and instruction–will be used by the Student to bring about expected changes in achievement and performance of Tasks for which the tools are needed. We will also be looking at how the Environments change and what Tasks the adults in the environments will do so that the Tools can be used effectively by the student.

PROCEED TO THE NEXT SLIDE
So, let’s take another quick glance at the implementation sequence of Leveling the Learning Field. We begin with the student and develop a plan that enables the student, in typical environments, to USE the selected tools to do expected tasks in order to reach a higher level of educational achievement and performance. Remember, as we move forward with the development of the implementation plan, we will be looking at TWO types of tasks: 
First, those tasks that will be done by the student using the AT – the ones we see in this graphic; and, 
Second, those tasks that need to be done by the adults in the environments in order to support the student using the AT which do not show in this graphic but are essential to student progress.

PROCEED TO THE NEXT SLIDE
The student uses AT and other strategies to be an active participant in educational activities that increase academic achievement and functional performance.

Although team members may be generally clear on the expected outcome, we need to be very specific to implement appropriately. Many positive outcomes are likely to occur through AT use; however, remember what was said earlier - a non-negotiable outcome in school is academic achievement and functional performance in the areas for which AT is needed.

PROCEED TO THE NEXT SLIDE
Stephen Covey says that it is important to “begin with the end in mind.”
As we start our exploration of questions that guide teams in the development of effective implementation plans, let’s begin by the meeting William – a young student who is not only a capable user of a variety of assistive technology devices, but also, a thoughtful self-advocate who understands the purpose and importance of AT in his life. William is a fine example of the “end” that we have in mind.

*Play video of William originally included in the Consideration Module and repurposed for this module.*

As we watched this video, we saw William using AT and other strategies support his active participation in educational activities. We also heard William and his teacher talk about how AT is increasing his academic achievement and functional performance. What we saw in this video, however, did not just “happen”. We saw a mature implementation of AT that has required careful planning at every step, from its beginning to what we see in this video and beyond. To move to this point required that William’s team address many questions.

**PROCEED TO THE NEXT SLIDE**
As author, director and human rights advocate, Eugene Ionesco, points out, it is the question that enlightens because it is the question—or series of questions, in this case—that enables teams to think deeply and determine the answers that are “right” for each student’s implementation.

As we explore the questions in each of the planning steps that lead to effective implementation, we will think about William and consider how his team might have answered those questions.

By working through these questions in each step with William and recording them on a TIPS Planning Guide, we will have a chance to not only see and hear about each step, but also to think about how steps can be applied when planning for our own students.

PROCEED TO THE NEXT SLIDE
Our first focus is on the student - identifying expected changes and planning specifically how the student will use the AT to do tasks for which the AT is needed.

PROCEED TO THE NEXT SLIDE
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

In William’s video, he and his teacher explain how and when he currently uses the different pieces of his AT. We saw a superb example of how AT was used as an accommodation that enabled William to accomplish expected tasks without making modifications to the tasks. If, instead, William’s tasks been modified and made less complex because of his disabilities, those modifications would have almost certainly had a negative impact on his opportunity to learn at his current level and rate.

We also saw that William is currently able to make choices himself about which piece of his system is most appropriate for which of his tasks.

In the beginning, however, it was specified in his plan that:

- William will use several tools to increase the quantity and quality of his written work.
- William will continue to use a pencil for brief writing tasks that generally require less than 20 words, such as short answers, filling in blanks, indicating choices on multiple choice items,
- William will use the word processor (in his case, specifically the Dream Writer) for when writing is expected to exceed 20 words.

In addition, the team decided that William would have a spell-checker available to him EXCEPT when completing spelling assignments and spelling tests.

PROCEED TO THE NEXT SLIDE
When developing an implementation plan, teams clearly identify the areas of achievement and functional performance in which the student is expected to change. While consideration and evaluation results and this bulleted list provide guidance, effective implementation requires that a level of specificity be understood by all involved in implementation.

*Briefly discuss each of the bullets on the right side of the slide.*

PROCEED TO THE NEXT SLIDE
Encourage participants to enter into a brief of this question and share their thoughts.

William’s IEP team determined that William use of AT was expected to lead to changes in academic performance and in written productivity. For the purpose of this exercise, let’s focus in on the area of written productivity only. In order to determine exactly what changes were expected, all involved in the implementation needed to understand William’s what written productivity levels were and how they were reached WITHOUT technology.

Refer participants to the demonstration planning form that will guide the activities throughout the rest of the module.

As you see in your demonstration planning form, William’s team determined that his unaided handwriting was legible for two to three sentences and that it took him twice the time to write those sentences than it took other students to produce the same amount of work. They also determined that his sentences were short and that, although he elaborated on his ideas considerably when speaking, he did not do so when writing. They also agreed that Team members could then think about how, under what conditions, and to what degree expected changes should occur, which brings us to the next question.

PROCEED TO THE NEXT SLIDE
To answer this question, the team thinks about the student’s current achievement and performance on tasks and the specific ways that they expect achievement and performance on those tasks to change through the use of AT.

**Briefly discuss each of the bullets on the right side of the slide. If any of these terms are unfamiliar to the participants, provide them with a sense of the aim or each term of each term, which is, of course, directly at the particular area of concern. The following section is included for the presenter and can be used to guide explanation if needed.**

- **Quality**: How well? (aim – increase. e.g.)
- **Quantity**: How much or many?
- **Independence**: How freely? (aim – move toward AT support replacing human when possible. e.g. writing with a word processor instead of dictating to a scribe)
- **Accuracy**: How correct? (aim – increase)
- **Spontaneity**: How “naturally” (aim – expected action occurs when and where appropriate e.g. student speaks when spoken to rather than needing more cues)
- **Rate**: How fast? (aim - increase or decrease. e.g. write at increased rate more quickly; walk, don’t run.)
- **Frequency**: How often? (aim - increase or decrease)
- **Duration**: How long? (aim - increase or decrease; e.g. increase time on task; decrease length of a protest)
- **Latency**: How soon? (aim - decrease student “lag time” before beginning)
- **Intensity**: How much? (increase or decrease. e.g. hard/soft; loud/soft)

PROCEED TO THE NEXT SLIDE
Encourage participants to enter into a brief discussion of this question and share their thoughts.

Use the following notes to explain if these points do not surface during the discussion.

Because William's written products were very short, without elaboration, and difficult to read without the technology, his team expected that use of the technology would lead to increases in the **quality**, **quantity**, and **accuracy** of his written work. William was currently writing independently but often needed help with spelling and other mechanics of completing his assignments. Maintaining and increasing his **independent**, accurate completion of assignment was also determined to be very important.

His team identified the following expected changes:
- **quality** - defined as elaboration of ideas in writing similar the elaboration he provided when speaking
- **quantity** – defined as several sentences longer than the two or three sentences he was writing by hand.
- **accuracy** (spelling and legibility) – defined as legible written products with correctly spelled words, whether produced by hand or other way.
- **independence** (less support from an adult) – defined as accurately completing assignments in a variety of ways with less help from adults

PROCEED TO THE NEXT SLIDE
When Re-SETTling, the team reviews the tasks for which the student requires the AT and identifies specific day-to-day activities that provide opportunities for increased participation and achievement. Often teams expect that implementers will know which tasks do not require the use of the AT and which do require the use of the AT and how to support that use, but that is generally not the case. Discussion is important to ensure alignment of expectations and opportunities across individuals and environments.

PROCEED TO THE NEXT SLIDE
When beginning implementation, teams select specific activities and tasks that provide embedded opportunities for the student to develop and use priority skills. As teams consider target activities, they select a small number (could even be one!) of high-priority activities or tasks that were identified during consideration and evaluation as difficult or impossible for the student at the expected level of independence without the use of the AT.

The selected activities and tasks should be, to the greatest extent possible, immediately useful and frequently appropriate so that the student will get a good bit of positive feedback early on. As the student and the implementers gain skill in using the AT, additional activities and tasks can be added a few at a time.

PROCEED TO THE NEXT SLIDE
After the activities are identified, the team reviews the barriers to participation for this student, and discusses how the AT, along with other strategies, will be used by the student to overcome the barriers and do the tasks. Although tasks can be modified or changed in some significant way, it is important for implementation teams to keep in mind that a goal of AT use in education is for the AT to be used as an accommodation. In other words, to the greatest extent possible, AT should be used as a means for the student to accomplish essentially the same tasks that are expected of others, but in a somewhat different way that does not change the nature of the task.

Thus, as a general rule, teams try to accommodate a student’s special needs with AT and other strategies that enable accomplishment of expected tasks instead of modifying tasks and/or lowering expectations.

PROCEED TO THE NEXT SLIDE
To answer this question the team thinks about the level and type of supports and cues that the student will require in order to be successful. For many students, the typical supports and cues that are provided for other students will be sufficient, but for some, identifying the supports and cues that are specifically needed is critical to their progress.

**Briefly discuss each of the bullets on the right side of the slide.**

In our example, it is likely that a student who has had a scribe for some time will need fairly high levels of support at the beginning, but will need less support as he becomes more competent not only in using the tool, but also in doing the task. Understanding the importance of providing the supports and cues that are needed, but not MORE than are needed, is critical to the team’s ability to increase the student's competence and independence. When deciding upon what cues are needed, the team will also discuss when and how to fade cues that are no longer necessary.

**PROCEED TO THE NEXT SLIDE**
Although William completes assignments independently at present and needs only natural cues given to all students (e.g. “For the next 20 minutes, please work on your essays.”), he needed some additional cueing when he was learning about when and when not to use his technology.

From what you were able to learn about William, what sort and level of cues do you think he might have needed in the beginning?

Encourage participants to enter into a brief discussion of this question and share their thoughts.

PROCEED TO THE NEXT SLIDE
As teams seek to increase the student’s competence in the area(s) of concern and specific tasks through the use of AT, it is helpful to look at the four aspects of competence that were defined by Janice Light for users of augmentative communication devices and adapted to apply to the broader field of assistive technology by Gayl Bowser.

PROCEED TO THE NEXT SLIDE
In order to help a student become a competent user of AT, the team needs to provide opportunities and the necessary support for the student to build skills in four different, but complementary areas: Functional Competence, Operational Competence, Strategic Competence, and Social Competence.

As we take a closer look at each of the four aspects of competence, we will talk about William and how he demonstrated competence in each aspect. As we do this, think about ways that his team might have built each aspect when he was learning to use his technology.

PROCEED TO THE NEXT SLIDE
The first area—Functional Competence—is closely related to instruction, progress on IEP goals, and progress in the general curriculum. A goal for ALL students is increased functional competence on the essential learning outcomes identified for each grade and subject area. In the case of a student using AT, the student who is functionally competent has developed an appropriate level of mastery of the knowledge for which the device is intended. In other words, he knows how to do the task(s) for which the device is intended.

As we saw in the video and have been talking about, William needs AT for written productivity and also needs support in reading. Although he uses a variety of AT tools and strategies that enable him to be actively engaged in learning, it is actually the instruction that is improving William’s reading and written productivity. By using technology to be actively engaged in learning activities and responsibilities, William is able to read, spell, create and edit text far beyond what he is able to create without the technology.

As teams plan for ways to build a student’s functional competence, they may find that the instruction needed is not typically provided at the student’s current grade level. If so, the team will need to plan how to provide the needed instruction as well as opportunities for the student to actively engage in activities that lead to mastery of the knowledge and skills.

PROCEED TO THE NEXT SLIDE
The second area—Operational Competence—involves how the device works. The student who is operationally competent is able to use it to do the tasks for which it was intended. In the video, we noticed that William is using a variety of devices and strategies. It is quite possible that he required very little instruction in how to operate the less complex devices in his system, such as the tape recorder or the spell checker. However, for the more complex devices like his word processor or the classroom computer, he needed ongoing support to be able to use it fluently and, quite possibly, will need ongoing, incremental instruction and support as he learns to use the more complex features of the device or higher level productivity software.

As teams plan how to build the student’s operational competence, they need to be sure to provide instruction as well as opportunities for enough guided and independent practice for the student to become increasing fluent in the operation of the device. Many times teams think that the student needs to be become operationally competent BEFORE he or she begins to use the device to build functional competence; however, this is not the case. In most situations, it is important for the team to provide opportunities for the student to learn to how to operate the device within the context of the functional tasks for which it was intended. That way, both areas of competence can be built simultaneously if the team is sensitive to the level of support that the student needs to be successful in EACH area, which may not be the same.

PROCEED TO THE NEXT SLIDE
The third area—Strategic Competence— involves knowing when to use the device and when not to use it. A student who is strategically competent knows when to use the device and when to use some other strategy or tool for a specific activity. In the video, we saw that William had been provided with a number of different tools and strategies. Many inexperienced teams think that a single tool can be used for ALL tasks once that tool is in place. However, William showed us quite well how important it is to have different tools for different tasks. He chose to use different technology tools and different strategies depending upon the complexity and difficulty of the task he was working on. William used a pencil for tasks such as short answers, writing his name on his paper, or keeping track of the numbers on the tape recorder where his answers could be found. He used the word processor for longer or more detailed writing tasks because that was more effective and efficient. As teams plan how to build the student’s strategic competence, they will think about how to provide both opportunities in which it is most effective and efficient for the student to use the technology AND opportunities in which other strategies are more effective and efficient. Many teams find that coaching is an important tool for teaching strategic competence. A prime example of coaching is what a parent does when a small child on the telephone—perhaps with Gramma—and the child is nodding her head to indicate agreement or affirmation. The parent may say, “Oh, that would work great if Gramma could see you, but on the phone, you have to use your voice” or later “Oh, my! Gramma can’t see you. How can you tell her?” In each case, the parent is acknowledging the child’s communication, helping the child build an understanding of why the strategy he or she is using will not be effective, and providing a cue that will help the child select a more effective strategy.

PROCEED TO THE NEXT SLIDE
The fourth area—Social Competence—involves using the device appropriately with other people. The student who is socially competent understands how to use the device when it is needed in a way that is compatible with the environment and with others. In the video, we noticed that William was talking very softly into his tape recorder at what appears to be a reading table. We also noticed that he is using the word processor at his desk in the center of what appears to be a general education classroom. He knows that it is not only important for him to use these tools in the resource room where he was initially introduced to them, but also in other situations where his tasks require their use. He also knows that it is important to use the tools in a way that causes the least distraction or disturbance to others.

As teams plan how to build the student’s social competence, they need to be sure that there are many structured and unstructured opportunities in which it is appropriate for the student to use the device across environments and across individuals. They also need to make plans for how they will coach appropriate use and also how they correct and re-teach the student when devices are not used appropriately so that this can be done consistently across environments regardless of which adults are involved.

At this point, we are not going to specifically think about how William’s competencies will be built, but this is a CRITICAL part of planning implementation for your students. You will see, I believe, as we go on, some of the ways that William’s team built in opportunities for him to develop the competencies he has.

And now, let’s have a look at planning in a way that develops supportive environments in which all students can learn and grow, including those using AT devices.

**PROCEED TO THE NEXT SLIDE**
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

William may be using one or more of this AT devices in whatever environment he is expected to write. The primary environments where he will use his AT are the general education classroom, the resource classroom, and at home. Each of the devices William uses are easily moved about and managed by him. They also have sufficient battery power to be used all day without plugging in. Although William currently uses his devices in a way that does not appear to disturb others in any way, in the beginning there are some considerations that had to be made about whether or not this was possible. William’s team decided to build his operational, strategic, and social competencies with the device rather than change the environment. No general changes needed to be made in the environment for William.

PROCEED TO THE NEXT SLIDE
AT implementation involves change not only in the lives of students, but also in the lives of the student’s family members, professional staff, educational (or community) environments, and other places where AT might be used to increase the functional capabilities of a student with disabilities. One important focus of an AT implementation plan is making sure that the student, the family, and involved school personnel understand how the student’s use of AT should “look” on a daily basis and their part in supporting that use.

When Re-SETTling, the team looks at the environments in which the student is expected to use the AT and determines what must be in place to support that student’s educational participation and achievement.

In William’s video, we saw a student who was very competent with his technology. We saw teachers who were successful and confident in their ability to work with a student who used a variety of technology. What we did not see — but will talk about as we progress through this section — is all that came before… all that had to be thought through, planned for, and done within the learning environments so that William could be successful. In addition to learning about William and his technology, his teachers had to make some changes in the environments and also learn to look at learning tasks in a somewhat different way so that they could foster William’s ability to learn and grow using technology.

In order to focus on what is needed in the environment, the team addresses four types of questions

- Questions about the general environment:
- Questions about student training
- Questions about equipment, and
- Questions about training for staff, family, and others

Let’s take a look at how the team might consider these questions about their specific environments.
Are changes in the general environments needed to support student success?

- Physical Access
- Sensory Access
- Availability of materials
- Availability of technology
- Additional support

When a student uses AT, there are some “housekeeping” issues that need to be considered. Teams re-examine the actual environments in which implementation will take place and determine what is needed to begin and what is needed to sustain effective implementation.

If there are any issues that need to be addressed, the team discusses possible solutions. Although some solutions can be readily arrived at by the team themselves, at other times, it is important to include administrators or others with decision-making and resource allotment responsibilities in the discussions.

*Briefly discuss each of the bullets on the right side of the slide.*

PROCEED TO THE NEXT SLIDE
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

William may be using one or more of this AT devices in whatever environment he is expected to write. The primary environments where he will use his AT are the general education classroom, the resource classroom, and at home. Each of the devices William uses are easily moved about and managed by him. They also have sufficient battery power to be used all day without plugging in. Although William currently uses his devices in a way that does not appear to disturb others in any way, in the beginning there are some considerations that had to be made about whether or not this was possible. William’s team decided to build his operational, strategic, and social competencies with the device rather than change the environment. No general changes needed to be made in the environment for William.

PROCEED TO THE NEXT SLIDE
Who are the adults who will be actually involved in the student’s AT use?

- Teachers
  - General Ed
  - Special Ed
- Educational Assistants
- Parents
- Related Services Providers
- Administrators
- Others

As teams plan for implementation, they identify specifically who will be involved in the implementation and what their level of involvement will be.

**Briefly discuss each of the bullets on the right side of the slide.**

Some of these people may seem unlikely to be involved in implementation.

**Ask participants what roles they think each of these persons might play in effective implementation.**

**PROCEED TO THE NEXT SLIDE**
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

Primary people involved in William’s program are:
- his general education teacher
- his special education teacher
- his parents
- his SLP
- his OT
- the district assistive technology specialist

PROCEED TO THE NEXT SLIDE
The adults involved in the implementation have many things to do. On the next few slides, we will see some of the possible tasks that the team will think about as they plan for implementation.
Briefly review each of the bullets on the right side of this slide and move to the next slide to see the complete list before encouraging discussion.

PROCEED TO THE NEXT SLIDE
CONTINUATION OF LIST FROM PREVIOUS SLIDE

Briefly review each of the bullets on the right side of this slide.

Some of these activities may already be taken care of or may be a part of the jobs of specific individuals, however, it is not always appropriate to match the task to the person whose job "seems like" one who should do the task. When planning for AT implementation, it is important to think about the intensity of each of these tasks as they relate to individual students and their needs, technology, and levels of independence and also about the experience, knowledge, skills, and availability of the various people who are involved.

Some of the questions teams need to discuss honestly and openly are: How much time and effort will be needed for various adults to accomplish each of these tasks? Are they "one shot," episodic (happening a few specific times and then ending), or ongoing? How can these tasks be shared so that the implementation is not dependent on any one person, but rather on the team? How can these tasks be shared so that the needed support is available to the student in a timely manner in each environment? Who will be the back-up for each person in the event there is a breakdown?

PROCEED TO THE NEXT SLIDE
Think of an experience when expected change did not occur. What was missing?

What tasks do the adults around William need to do and who is most likely to do them?

Encourage participants to enter into a brief group discussion (5 – 7 minutes) of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

Tasks and who might do them in William’s environment:
- Teach the student – general ed and resource teachers, some skills may be taught or supported by related services providers and parents
- Collaborate with others - all
- Provide the device(s), peripheral tools, and consumable supplies – AT specialist
- Customize the AT – AT specialist, resource teacher
- Make AT available when and where needed – all
- Provide needed supervision or support to student – adult in whatever environment the William happens to be in, all know how
- Manage and maintain devices and materials – AT specialist, William, and parents
- Collect data and evaluate results – all

PROCEED TO THE NEXT SLIDE
Given the tasks that have been determined and assigned, what supports and training does each individual need in order to do the tasks in which they are involved? This does not mean that each person needs the SAME supports and training, but rather that training and supports need to be specifically tied to the job-related functions of the individual.

*Briefly discuss each of the bullets on the right side of the slide.*

The main questions that teams need to discuss are “who needs to know what for implementation to progress well?” and “how will they learn it?”

**PROCEED TO THE NEXT SLIDE**
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

In William’s situation, little training on the devices was required, as the devices were reasonably “low-tech”. Most of the training actually focused on how to use the devices instructionally, what to expect from William, and what to do when things went wrong. The AT specialist in William’s district was very skilled and experienced, thus, the training was provided “in house” and ongoing support was collaborative among team members. The device and how it works – William, parents, teachers, related services personnel will be trained by the AT specialist. 1 session for all except that William and teachers will receive additional sessions on the Dream Writer.

Expected use of the device – All, especially teachers and parents will discuss this in a session led by the AT specialist

Strategies that encourage use of the device – parents and teachers – AT specialist

Troubleshooting strategies – provided to all by AT specialist

Strategies for determining effectiveness – collaboratively developed in discussion guided by AT specialist

How to get help when needed – contact information for AT specialist and manufacturers of each device were provided to all

PROCEED TO THE NEXT SLIDE
As team members think about this question, they try to be as specific as possible about the types of collaborative support for implementation they will need from other staff members, parents, and administrators. They also discuss strategies for engaging these supporters in the implementation and select strategies that are most likely to be meaningful and acceptable to people within their environments.

*Briefly discuss each of the bullets on the right side of the slide.*

**PROCEED TO THE NEXT SLIDE**
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

William's team sought and obtained administrative support for meeting for one hour a week during school hours. When seeking this support, they explained what they needed to do and how meeting together would be very important to ensuring that William was appropriately supported across activities, environments, and service providers. They also explained how meeting would enable them to share responsibilities, align their implementation strategies, discuss data about William's progress, and make changes when needed. Their administrator asked them to make suggestions about how to schedule the meetings in a way that would, at least at first, include the district AT leader. He also asked about how they planned to keep William's parents informed and suggested that they be invited to participate in the meetings at least one a month. Time to meet was arranged during the school day by shifting some planning periods around so that there was a shared planning period at least one a week. Each month, one meeting was held early in the morning before the official start of the school day when William's parents were able to participate. The administrator provided a flex hour (early departure one day) within the week of that meeting for school staff who participated.

PROCEED TO THE NEXT SLIDE
Ask if there are any questions about planning the “doing” parts of implementation before we move on to planning for evaluating the outcomes and effectiveness of the implementation.
Provide time for questions and comments, if any.

PROCEED TO THE NEXT SLIDE
As we discussed earlier, implementation and evaluation of effectiveness are continuous ongoing processes. Including evaluation as part of the implementation plan helps teams focus on the academic and functional results that are the expected outcomes of the implementation and their own roles in determining whether the AT is fostering achievement. It ensures that everyone has the same vision for the student’s use of AT and helps to avoid confusion about expected outcomes.

It is important to revisit the notion that, while the technology might be a critical factor in supporting changes that occur, it is very rare for the itself technology to be what actually CAUSES changes in educational achievement to occur. What we want to know goes beyond determining how well the student is or is not using technology. What we want to know is whether the implementation is supporting the student’s use of the technology to engage in learning activities in a way that is leading to increased functional performance and educational achievement.

In this final section, let’s have a look at some of the questions the team will think about.

**PROCEED TO THE NEXT SLIDE**
There are four major questions that the team will want to be able to think about and answer periodically as they proceed with the implementation. The following specific questions help teams think about what they will do to gather and analyze evidence – also called data – that helps them answer these questions accurately. Using data to inform their answers to these questions either ensures that implementation is progressing as it should or informs the team about what changes are needed to increase effectiveness.

PROCEED TO THE NEXT SLIDE
What evidence will be collected to convince us and others that AT is supporting expected change?

Evidence of
- Changes in achievement
- Changes in functional performance
- Changes in ability to meet goals and criteria
- Other

First, teams review the first steps in the implementation plan to be sure they are clear about changes that are expected in the major area(s) of student achievement and performance and what those changes will “look like”.

PROCEED TO THE NEXT SLIDE
Next, they discuss the specific type of change that is expected as well as how much change is needed to meet the minimum criteria for success.

It is very important for team members to review the areas and dimensions of expected change that they identified in the early steps of intervention planning and to affirm what they plan to measure to demonstrate the level of change that occurs. Unless this is clear, it is possible to spend time and energy collecting evidence that does NOT provide the information needed to determine whether the intervention is actually working or not and, if not, what changes are needed.

As we think each of these dimensions, it is fairly easy to see that some of dimensions can be counted and compared (e.g. duration, frequency, and rate) while others need to be observed and recorded in some other way (e.g. quality, spontaneity) in order to be compared in any meaningful way.

Remember, however, that whether change is measured through counting, some other more qualitative comparison or a combination of both, it is CRITICAL to have evidence of the levels of achievement and performance BEFORE the use of technology is begun so that you can establish a starting place or baseline against which to measure effectiveness.

Without knowing what was happening before the intervention, it is not possible to know – or demonstrate to others - whether there have been changes.

PROCEED TO THE NEXT SLIDE
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

We heard William’s teacher talk about observable, measurable changes in William’s work as a result of his use of technology. His team identified the following expected changes:

- quality - defined as elaboration of ideas in writing similar the elaboration he provided when speaking
- quantity – defined as several sentences longer than the two or three sentences he was writing by hand.
- accuracy (spelling and legibility) – defined as legible written products with correctly spelled words, whether produced by hand or other way.
- independence (less support from an adult) – defined as accurately completing assignments in a variety of ways with less help from adults

PROCEED TO THE NEXT SLIDE
Once the type of information that needs to be gathered is identified, it is possible to identify strategies that could be used to collect it. As we go through this list, think about what types of evidence could be gathered and recorded in each way.

*Go through the list of on the right side of the slide and ask participants what types of information about change might be captured with each.*

After the team determines what evidence (data) will be needed, they review the general decisions they made earlier about roles different adults in the environments would play in the implementation. They also need to think about who will be responsible for gathering each type of data and the develop a schedule for gathering it.

**PROCEED TO THE NEXT SLIDE**
Encourage participants to enter into a brief discussion of this question and share their thoughts.

The following information is provided to support discussion and provide examples. Other ideas and suggestions may be equally or more useful.

William's team collected evidence/data on changes in quality, quantity, and accuracy by:
- Teachers collecting and reviewing copies of written products at least three times a week.
- All team members observed William on a daily basis and kept notes of progress.
- Teachers kept a daily record counting the number of times William needed help on spelling and mechanics of assignments.
- Team had discussions (subjective reporting) that included William and his parents in which they talked about what they thought was working well and where they saw needs for improvement or change.
- Teachers, therapists and parents took and shared periodic videos that provided evidence of the differences in William’s productivity with and without the use of technology.

PROCEED TO THE NEXT SLIDE
When and for what purpose will data be reviewed and analyzed?

- Frequently during implementation
- Periodically scheduled reviews
- Formative evaluation
- Summative evaluation

As team members think about this question, they make sure that what they have planned is not just about data being **collected**, but also about data being **analyzed** and used to improve implementation.

The team talks about who will be involved in the analysis and when the analysis will occur.

At this point, there is emphasis on the importance of determining EXACTLY when the data will be reviewed. It is critical that data be reviewed on a periodic schedule and that review and analysis not be left until just before the ARD meeting or the end of the year.

Formative analysis underscores the importance of using data to support improvements in the implementation – making decisions about what needs to be stopped, added or changed so that the implementation runs as smoothly and works as well as it should.

Summative analysis – meaning making final judgments about the quality and effectiveness of the implementation – is generally not particularly useful unless the implementation is being discontinued for some reason.

**PROCEED TO THE NEXT SLIDE**
When analyzing the data, there are several things that the team will want to look at and be able to explain based on the evidence.

*Review each of the points of the slide.*

**PROCEED TO THE NEXT SLIDE**
When must changes be made to improve the implementation of AT?

When data indicate...
- Student is not progressing
- Expected results are not being achieved
- Criteria are not being met
- Changes in student, environment, or task result in student needs not being met

In AT implementation, evaluation is typically formative. In other words, what the data show makes a huge difference in whether the implementation continues as planned or is changed based on the evidence.

**Review each of the points of the slide.**

When the data indicate that changes are necessary because something in the current plan is not working, changes must be made without delay so that student learning time is not irretrievably lost.

**PROCEED TO THE NEXT SLIDE**
Summary: Let's take a look at what we have learned. Teams who have crafted and implemented a thorough plan are much more likely to be able to collaboratively work toward success. They will also be able to clearly recognize success or the lack of it and explain it, along with supporting evidence, to others. They will proceed with the plan based on student progress or will make changes as indicated by thoughtfully collected and analyzed data. Teams who plan and operate in this way will be much clearer on whether it is the tools that need to change or whether is something else... something about the student, the environments, or the tasks. By implementing in this way, the likelihood of student achievement and improved performance through the use of technology is not only greatly enhanced, but also can be clearly communicated.
Ask if there are any questions before closing.

Provide time for questions and comments, if any.

PROCEED TO THE NEXT SLIDE FOR CLOSING.
We close our session with two quotes.
First, a learned educator summarizes the importance of planning.
Read the quote.
PROCEED TO THE NEXT SLIDE
And finally, a contemporary leader and creator of change, stresses the importance of action.

*Read the quote.*

This, really, is why we plan at all... so we can make sure that students using assistive technology are "stepping up the stairs" to increased functional performance and academic achievement.