

Section 6: Adapt Lessons for Technology Integration

Description, Rationale and Guidelines



Once the overall implementation plan is in place, one area that must be continually developed is the plan for integrating the technology into the student's daily educational program. Students with disabilities require accommodations and modifications to participate, communicate and learn more effectively in the classroom. These accommodations and modifications, including how technology will be used, should be planned and outlined in the curricular unit or lesson plans. The classroom curriculum, possibly adapted or modified already to accommodate the student's specific needs, must be revisited to include the use of technology as a tool for meeting the student's goals. This aspect of implementation focuses on the day-to-day use of the technology and includes the adaptation of lessons to accommodate the preparation, set up and use of the technology.

A major implication for teams integrating technology into a student's educational program is the need for time to be set aside for the Special Education teacher, the classroom teacher and the Special Education Assistant to plan and assess the specific units and lessons that feature the use of technology. The Special Education Assistant also requires time to maintain the technology and prepare any support materials that are needed. If teams do not set aside time for these critical tasks, the likelihood of successful technology integration is greatly reduced.

Teams can begin to plan for technology integration by looking at the typical activities in the student's educational environment. Each activity can then be adapted to include the assistive technology tool which will allow the student to successfully complete the activity at his or her level.

Here are some examples of typical classroom activities and how they can be modified or adapted for students with disabilities who are using assistive technology (adapted from *Quick Reference Guide for Typical Classroom Activities* from Georgia Project for Assistive Technology <http://www.gpat.org>)...

Example 1: Completing Writing Assignments

Typical Tasks

- Writing a story about a theme or topic
- Writing a journal entry
- Taking notes from whole group instruction or discussion
- Answering questions based on textual materials

Typical Accommodations

- Provide student with additional time to complete the writing task
- Reduce the amount of writing expected
- Provide student with template for writing
- Photocopy peer notes
- Provide student with reader and / or scribe
- Provide student with alternate activity or task

Typical Accommodations Using Assistive Technology

- Provide student with standard word processor with spell and grammar checker with necessary access method (e.g. enlarged keyboard)
- Provide student with software applications that use graphics to support written output (e.g. Writing with Symbols 2000)
- Provide student with talking word processor software (e.g. Write:OutLoud)
- Provide student with word prediction software to support sentence construction (e.g. Co:Writer)
- Provide student with dedicated word processor to support note taking (e.g. AlphaSmart Neo)
- Provide student with software applications that provide structured writing environments (e.g. Clicker 5)
- Provide Braille translation software and a Braille embosser

Example 2: Reading Books or Reference Materials

Typical Tasks

- Read textbooks related to instructional topic
- Read novels
- Read picture books

Typical Accommodations

- Provide peer or teacher assistance in identifying unfamiliar vocabulary
- Provide peer or adult to read materials to student
- Provide the student with additional time to read the materials
- Provide large print or audio materials
- Decrease the length of the reading assignment
- Reduce the complexity of the text

Typical Accommodations with Assistive Technology

- Provide student with alternate electronic formats of textual materials
 - Import etext file of textbook into talking word processor (e.g. Write:OutLoud)
 - Scan novel into text reading software (e.g. Kurzweil 3000)
- Provide student with picture symbol version of book (e.g. using Boardmaker)
- Provide the student with a Closed Circuit Television (CCTV) system for reading book
- Provide student with electronic text reader for translation and production (embossing) of braille copies (e.g. Kurzweil 1000)

Example 3: Small Group Discussions on Instructional Topics

Typical tasks

- Respond to teacher and peer questions
- Ask questions related to instructional topic
- Make comments during group discussion
- Give an oral report

Typical Accommodations

- Provide preferential seating to enhance and encourage interaction
- Encourage student signals when ready to respond
- Prepare student by practicing contributions or pre-teaching necessary vocabulary
- Provide student with enough time to compose and respond
- Use as many visual cues as possible to support communication

Typical Assistive Technology Solutions

- Use picture communication symbols to support interactions (e.g. communication boards created with Boardmaker)
- Use augmentative communication software to develop and practice communication skills (e.g. Speaking Dynamically Pro)
- Provide student with augmentative communication device to meet daily communication needs (e.g. Springboard)

When developing or adapting lesson plans that include technology, it is important for teams to remember that the goal is not to teach technology in isolation, but to use it as an integral part of the instructional program. When teams are beginning to create or adapt technology-enhanced lessons, they may choose, initially, to follow a more formal approach like the one described below. Once the team is more experienced, the lesson plans could be less detailed and may become regular additions to the teacher's unit or lesson plans.

Developing a Lesson Plan that Integrates Technology

Teams should consider the following steps when creating lesson plans that integrate assistive technology solutions...

1. Identify the learning objectives or outcomes based on local or Ministry of Education guidelines.
2. Describe the lesson activities which address the learning objectives.
3. List the materials and equipment that are needed to implement the lesson.
4. Identify the accommodations or modifications to the lesson that are needed to support specific students.
5. Identify the accommodations that will use assistive technology that will be used to support specific students.
6. Determine the method for assessing student performance when the lesson activities are completed.
7. Identify any extension or remediation activities that may be needed.
8. List any resources that are needed to support the lesson.

The extra planning that is needed when integrating assistive technology into units and lessons may seem daunting, but the extra planning can be managed more easily if it occurs concurrently with the regular daily and weekly classroom planning. The most successful teachers don't create a separate "assistive technology based lesson" but, instead, simply add a section to their unit or lesson that includes specific details for those students who will be using technology to achieve their goals. After incorporating the concepts of assistive technology integration into her pedagogy, one very successful teacher merely split her daybook page into two columns. One column was for the majority of students and the other for those using technology. Referring to her overall unit plan, as she planned the daily lessons and activities, she recorded the traditional lesson in the left column and the plan with accommodations in the right. As more and more classrooms adopt the Universal Design for Learning (UDL) strategies, this type of planning will become standard.

Tools for Adapting Lessons that Integrate Technology

Teams who would like some tools for planning and adapting technology enhanced lessons often use variations on their own traditional lesson plans. However, here are some more generic tools to help the lesson planning process...

1. **Planning for AT in School Tasks: Addition to SETT Framework**
(Zabala, 2001 <http://sweb.uky.edu/~jszaba0/SETTFORMS2003.PDF>)

This chart assists school based teams in identifying specific accommodations and adaptations and the corresponding technology tools that will be used to support various activities in content areas.

2. **TEKS** (Region IV Education Service Center)
(<http://www.texasat.net/docs/deboer.lesson.plan.diamond.pdf>)

This graphic organizer quickly outlines a lesson with adaptations for Gifted / Talented, Advanced, Accommodated and Modified students. The organizer also has sections for assistive technology tools.

3. **Lesson Plan** (SET-BC)

This general form is for planning a lesson and includes columns for adapting and/or modifying the lesson as well as a third column for students who require assistive technology to complete the lesson.

4. **Best Practices in Technology Integration Plan**
(MAISA and the REMC Association of Michigan – Dan Betts
<http://www.remc11.k12.mi.us/bstpract/bstpract/148/148.pdf>)

This lesson plan provides a good example of one that has been written specifically for a challenging student group – students who are severely multiply impaired. The lesson plan demonstrates how to write lesson objectives, develop activities and describe plans for assessing technology use.

5. **Integrated Technology Lesson Plans (Internet for Classrooms)**
(http://www.internet4classrooms.com/integ_tech_lessons.htm)

This website is an extensive collection of links to sites featuring lesson plans that integrate technology.

PLANNING FOR A.T. IN SCHOOL TASKS (2 pages)

Addition to SETT Framework forms (Fonner)

Directions: For each content area, make a list of the type of academic and social class activities that occur during that class time. Content Area activities are things such as listening to the teacher lecture, completing a worksheet, writing a journal, homework, etc. For each activity, list the instructional grouping since this may have an impact on the type of technology that can be utilized. Next, list the instructional and/or assistive tool(s) to be used.

Content Area	Grouping				Accommodations & Adaptations (Time, Quantity, Personal Assistance)	Technology Tool to Use (examples: word processor, text reader, calculator, page turner, electronic outliner, AAC, white board, visual schedule, switch, etc.)
	Large Group	Small Group	Pair	One on One		
Activity (examples: teacher lecture, worksheet, reading, writing, manipulatives, etc.)						

Content Area	Grouping				Accommodations & Adaptations (Time, Quantity, Personal Assistance)	Technology Tool to Use (examples: word processor, text reader, calculator, page turner, electronic outliner, AAC, white board, visual schedule, switch, etc.)
	Large Group	Small Group	Pair	One on One		
Activity (examples: teacher lecture, worksheet, reading, writing, manipulatives, etc.)						

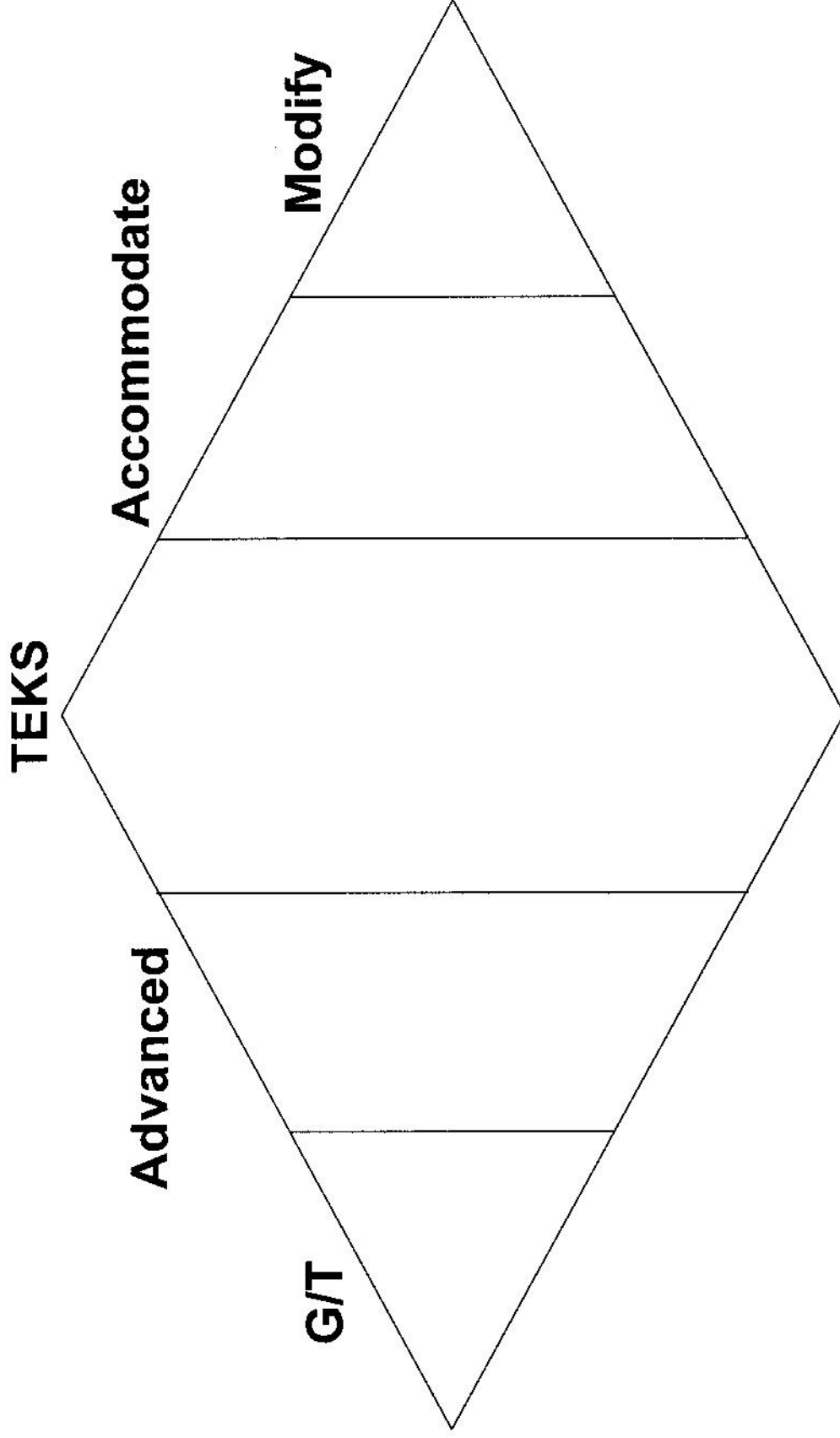
Content Area	Grouping			Accommodations & Adaptations (Time, Quantity, Personal Assistance)	Technology Tool to Use (examples: word processor, text reader, calculator, page turner, electronic outliner, AAC, white board, visual schedule, switch, etc.)
	Large Group	Small Group	Pair One on One		
Activity (examples: teacher lecture, worksheet, reading, writing, manipulatives, etc.)					

Content Area	Grouping			Accommodations & Adaptations (Time, Quantity, Personal Assistance)	Technology Tool to Use (examples: word processor, text reader, calculator, page turner, electronic outliner, AAC, white board, visual schedule, switch, etc.)
	Large Group	Small Group	Pair One on One		
Activity (examples: teacher lecture, worksheet, reading, writing, manipulatives, etc.)					

Content Area	Grouping			Accommodations & Adaptations (Time, Quantity, Personal Assistance)	Technology Tool to Use (examples: word processor, text reader, calculator, page turner, electronic outliner, AAC, white board, visual schedule, switch, etc.)
	Large Group	Small Group	Pair One on One		
Activity (examples: teacher lecture, worksheet, reading, writing, manipulatives, etc.)					

Subject: _____

Concept/Topic: _____

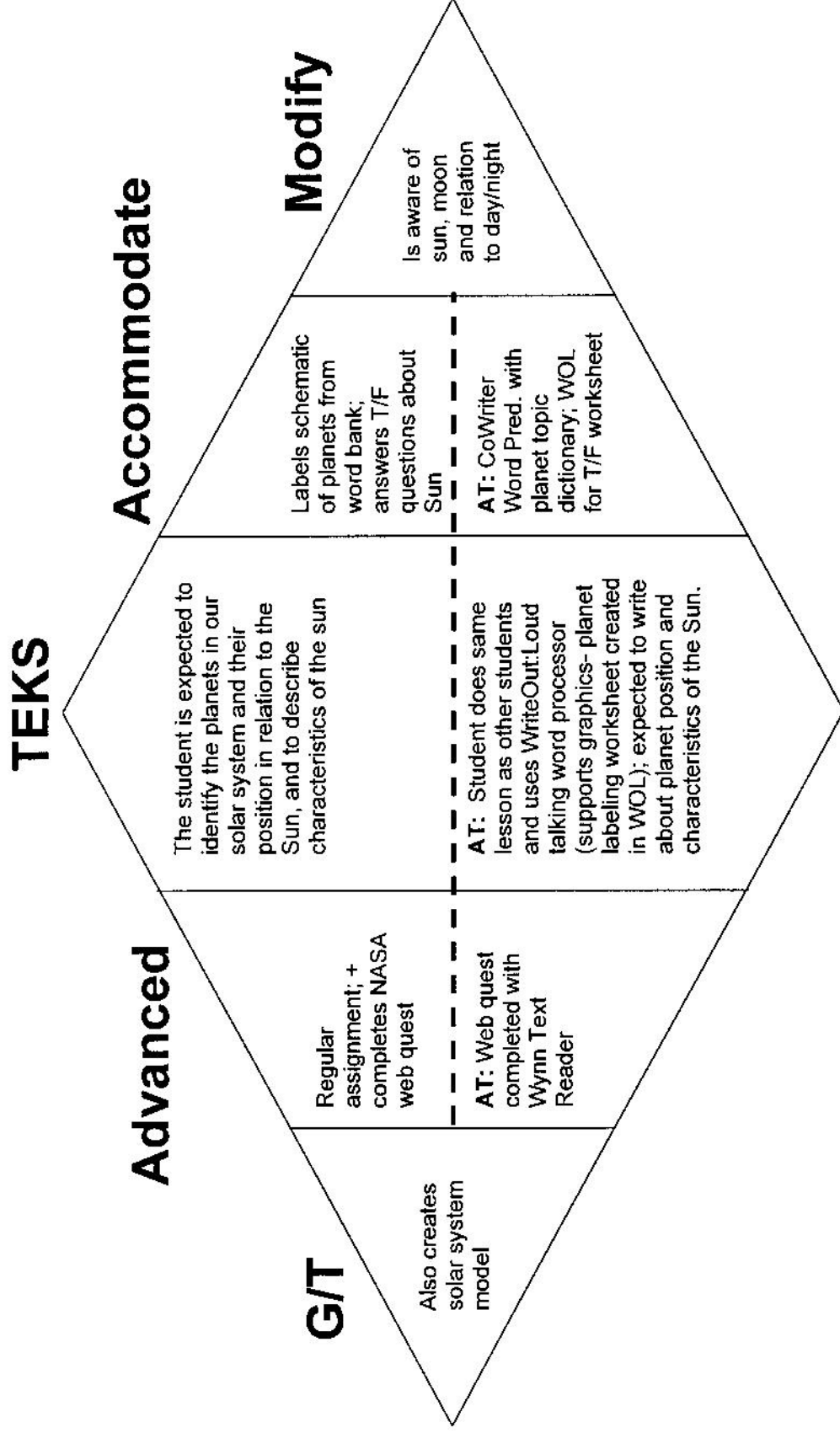


Adapted from: DeBoer, A. and Fister, S. (1995). *Working Together: Tools for Collaborative Teaching*. Sopris West: Longmont, CO.

Developed and Provided by Region IV Education Service Center

Subject: 3rd Grade Science

Concept/Topic: Natural world includes earth materials and objects in the sky



Adapted from: DeBoer, A. and Fister, S. (1995). *Working Together: Tools for Collaborative Teaching*. Sopris West: Longmont, CO.

Developed and Provided by **Region IV Education Service Center**

Lesson Plan

Unit / Theme: _____

Lesson: _____

Standard	Adapted / Modified	AT supported
Learning Objective(s)...	IEP Objective(s)...	AT Objectives (competencies)...
Activity / Task (time)...	Activity / Task (time)...	Activity / Task (time)...
Remediation / Extension...		

Lesson Plan

Materials / Equipment needed...	Materials / Equipment needed...	Materials / Equipment needed...
Preparation needed...	Preparation needed...	Preparation needed...
Student Assessment...	Student Assessment...	Student Assessment...

Resources: _____

Notes: _____

Lesson Plan (Sample)

Unit / Theme: Solar System

Lesson: Identifying the Nine Planets

Standard	Adapted / Modified	AT supported
<p>Learning Objective(s)...</p> <ul style="list-style-type: none"> - Identify the planets in our solar system and their position relative to the sun - describe five characteristics of each planet <p>Activity / Task (time)...</p> <ol style="list-style-type: none"> 1. Anticipatory set – putting planets in order with peer (10 min) 2. Whole group video (10 min) 3. Label diagram of solar system and write paragraph describing each (20 min) 4. Choose "favourite" planet for next week's activity and report (10 min) <p>Remediation / Extension...</p> <p>Remediation – sort planets and characteristics into chart</p> <p>Extension – create page in "Guess the Planet"</p>	<p>IEP Objective(s)...</p> <ul style="list-style-type: none"> - use vocabulary from word banks to label and write descriptions of scientific terms - construct a paragraph with three or more Sentences <p>Activity / Task (time)...</p> <ol style="list-style-type: none"> 1. Anticipatory set – putting planets in order with peer (10 min) 2. Whole group video (10 min) 3. Cut out planet names from word bank and write two characteristics of each planet 4. Choose "favourite" planet for next week's activity and report (10 min) 	<p>AT Objectives (competencies)...</p> <ul style="list-style-type: none"> - turn on computer and launch Co:Writer independently - locate and launch worksheet template from desktop <p>Activity / Task (time)...</p> <ol style="list-style-type: none"> 1. Anticipatory set – putting planets in order with peer (10 min) 2. Whole group video (10 min) 3. Use Co:Writer to add names of planets to Write:OutLoud worksheet and write three words that describe each Planet (20 min) 4. Choose "favourite" planet for next week's activity and report using TechTouch

Lesson Plan (Sample)

<p>Materials / Equipment needed...</p> <ul style="list-style-type: none"> - sheet with pictures of planets and names - National Geographic video - paper - markers / pencil crayons <p>Preparation needed...</p> <ul style="list-style-type: none"> - create anticipatory set planet sheet - set video to predetermined point - examples of completed task <p>Student Assessment...</p> <ul style="list-style-type: none"> - rubric for completed writing task 	<p>Materials / Equipment needed...</p> <ul style="list-style-type: none"> - sheet with planet word bank and solar system - markers, pencil crayons, scissors, glue <p>Preparation needed...</p> <ul style="list-style-type: none"> - create worksheet with word bank and diagram <p>Student Assessment...</p> <ul style="list-style-type: none"> - correct labels - assessment of written paragraphs 	<p>Materials / Equipment needed...</p> <ul style="list-style-type: none"> - desktop computer with Co:Writer and WOL - Co:Writer topic dictionary on planets - Write:OutLoud planet template <p>Preparation needed...</p> <ul style="list-style-type: none"> - create Co:Writer Topic dictionary - create Write:OutLoud template <p>Student Assessment...</p> <ul style="list-style-type: none"> - correct labels - accuracy of descriptive words - anecdotal observation of computer use
---	--	---

Resources: _____

Notes: _____

MAISA and the REMC Association of Michigan Best Practices in Technology Integration Plan

Title: Developing Cause & Effect Understanding in Severely Multiply Impaired Students

Subject(s): Basic Special Equipment Utilization

Intended Grade Level(s): Teen/Adult Severely Multiply Impaired Students

Description:

The student will be asked to activate a single access switch to create various sounds and images on the computer screen. Teaching techniques will include cueing, hand over hand manipulation, fading, direct, delayed, and intermittent reinforcement as provided within the software.

Objectives:

The main goal of this plan is to develop, encourage, and maintain active interaction with, and control over, the environment by activating single access switches to produce the desired effect.

The specific target skill to be acquired is demonstration of cause and effect while activating a single switch. Other skills that may be acquired but are not targeted are: tolerance of objects on student's tray/desk, tracking of sound, tracking of image on a screen, signaling awareness of change in environment, attending to computer screen, demonstrating alerting response to sound, responding to screen change, increasing functional use of limbs/body to activate the switch (switch may be activated by various body parts including but not limited to the hand, elbow, head, dependent on individual student physical disability). This lesson may also serve as a precursor to, or in combination with, switch activation lessons in which students are taught to use single access switches to control various environmental elements, and augmentative communication devices.

Materials/Hardware/Software:

To complete this lesson students should have consistent, frequent access to the following:

- A computer with single switch access hardware and sound card. Ability to record messages is a plus but not a necessity. Also, a 17-inch or larger monitor screen size is preferred but smaller sizes may work. For this population the larger the screen size the better as the

purpose of the lesson is for the student to focus on the computer screen. Additionally, updated sound cards with realistic speech sounds (as opposed to the robotic speech of the older cards and computers) are preferable but not necessarily a requirement.

- A single switch that the student has the ability to activate. This may be a puff switch, movement activated switch, motion detection switch, or a direct touch activated switch.
- Trays or mounted holders that allow the student to activate a single switch.
- For this lesson plan, 101 Animations, Windows 95 version, published by RJ Cooper & Associates will be used. However, nearly any software that is activated by single switch may be used. It is important that the student finds the images and sound produced by the hardware stimulating. The teacher may want to experiment (as budget and time allows) with different programs to find the one that works best for their student.

Technology Rationale:

Students with severe multiple impairment have little or no control over their environment. Activities of daily life are done either to them or for them.

Technology provides for at least the possibility that these students may achieve a modicum of control over their lives.

Activities/Procedures:

Teacher pre-activities:

1. The teacher will need frequent access to a computer which has single switch hardware, sound card, and software that is activated by a single switch. In this case, 101 Animations, Windows 95 version, published by RJ Cooper.
2. The teacher will need to experiment with the kind of switch (puff, motion sensor, motion detection, etc.) and the placement of that switch to determine the combination that is easiest for their specific student to activate. Placement of the monitor and lighting conditions are also important considerations. A darkened room in which the only light source is the monitor itself may be the best environment for your particular student. Consultation with physical and occupational therapists when making this determination can prove to be beneficial.
3. The learning environment should be as isolated as possible from other activities and students to help eliminate, as much as is feasible, any potential distractions.
4. The teacher, optimally, should work with the student using a one-on-one ratio for at least 15 minutes per day. Other students may watch

the activity but care should be taken that these observers are not serving as a distraction to the student being focused on.

Activities:

1. Load the program on the computer and guide the student to the desired activation sequence. The teacher may physically guide the student to the activation through physical cueing or hand over hand manipulation. **Note:** Verbal cueing is not used in this plan. The focus student is severely impaired. Language cues require that the student first process the verbal input and then act upon it. Consequently, verbal cues may act as a distraction for the student rather than provide necessary/helpful information.
2. Once the switch has been activated monitor student for response to the sound/screen. The teacher may react to the screen with single words or short phrases but it is recommended that the teacher keep language to a minimum. As much as possible, allow the sound and screen to be the reinforcer, thereby allowing the student to focus on the screen rather than on the teacher's language or on the teacher.
3. Fade cueing a student becomes more proficient. Give as little cueing as possible throughout the exercise. Adjust switch placement as necessary.

Assessment/Evaluation:

Criteria:

As with any student in this functional range, assessment must be individualized. The teacher must determine what criteria will best reflect attainment of specific goals. Criteria used for this plan may include the following:

- Eye contact with switch
- Physical attempts to activate switch
- Physical response to sound/screen changes (e.g. startle response, turning toward screen/sound, smiling frowning, etc.)
- Eye contact with screen
- Number of independent activations within a predetermined time period.

Data Collection:

Progress within this population is almost universally slow. Therefore, data collected on a daily, or even weekly basis is often both time consuming and wasteful. It eats up teacher time that could be spent with the student and provides little if anything by way of meaningful information.

Baseline data is collected on areas of criteria identified for the first one or two sessions. Data can then be collected at rates of eight to nine week intervals. This will provide sufficient feedback to the teacher to evaluate criteria and monitor the setup of necessary environmental conditions.

An alternative to this method may be noting specific data of importance when it occurs. It is recommended that teachers using this technique list only achieved aspects of criteria rather than the multitude of negatives that the student is likely to receive.

Note: Due to the characteristics of this functional level, it is advised that work should continue at a consistent pace for several months. Teachers should monitor for very small signs that progress is being made. Document progress observed, even if it does not meet the pre-set criteria the teacher started with.

Follow-up Activities:

- Hook up a single access switch to an environmental control unit to turn on and off various electric appliances (lights, fans, mixers, blenders, radios, tape players, etc.)
- Hook up a single access switch to activate various battery activated items (e.g. toys that make noise or light up, tape/CD players, radios, etc.)

Name: Dan Betts

School District: Berrien County Intermediate School District

School: Blossomland Learning Center

**Address: 711 St. Joseph Ave.
Berrien Springs, MI 49103**

Case Study of Effective Lesson Adaptation

Lynn, a very effective Grade 8 teacher, began implementing Kurzweil 3000 (www.kurzweiledu.com) after her district had purchased a school license for the middle school. She was interested in exploring how the program could help support some of her students who were having difficulty reading grade level novels and Social Studies text. She had a range of students in her class including one student who had autism spectrum disorder and one who had suffered a traumatic brain injury. In addition, like any class, she had a number of students who had learning difficulties. Consequently, many students had difficulty reading and understanding grade level content material.

With her Special Education Assistant (SEA), Lynn began by planning how to use Kurzweil 3000 to support students' access to text. Taking one chapter from the text or novel, she created a list of comprehension questions and new vocabulary. The SEA scanned the text using Kurzweil 3000 and checked it for reading and pronunciation accuracy. Then the file was saved and the SEA passed it on to Lynn. Lynn saved a copy of that file as the first adapted version in which she embedded a few additional instructions to help those that just needed a little guidance. She saved a copy of that second version and adapted it further by embedding more instructions and some vocabulary clarification annotations. Finally, she saved a copy of that version and embedded the text with a number of comprehension questions that the students could complete while reading the text. She also added a custom vocabulary list containing words the students would need when answering questions or writing about the text.

All four versions were available for student use and Lynn identified which students would be using the different versions. The regular program students had the option of using the first or second version, the students with learning difficulties could use the second or third version, and those most challenged were directed to use the fourth version.

Her lesson plans had four columns, corresponding to the four types of adapted materials – each with their own objectives, activities and assessment tools.

While this sounds like a great deal of work, Lynn and her SEA quickly got into a routine and after a few months had scanned and prepared much of the textual material that the students would be using. She was confident that the time was well spent since she was planning on using the materials for several years. As a bonus, the vision teacher became aware that she was creating these resources and took copies to use with other visually impaired Grade 8 students who would be using the same textual materials.

