



# Working with Students

# Using Switches:

## Collaboration is Key

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# Objectives

Participants will identify at least three types of activities involving switches that can provide increased access to a free and appropriate public education (FAPE) for their student/s.

Participants will be able to describe three strategies used to troubleshoot switches and related equipment in their own classroom or school setting.

Participants will be able to list three modifications to balance the relationship between the “task” (e.g. goal area) and the “technology” (e.g. switch-adapted equipment) used by a given student.

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What is **one word** that comes to mind when you think of using switches?

*Please share in the chat.*

<https://now.tufts.edu/articles/working-toward-independence>

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# Where I learned about switches...

Tufts University, *OT & Engineering*

Perkins School for the Blind,  
*Assistive Device Center*

The Boston Home, *Rehab Dept. &  
Wheelchair Enhancement Center*

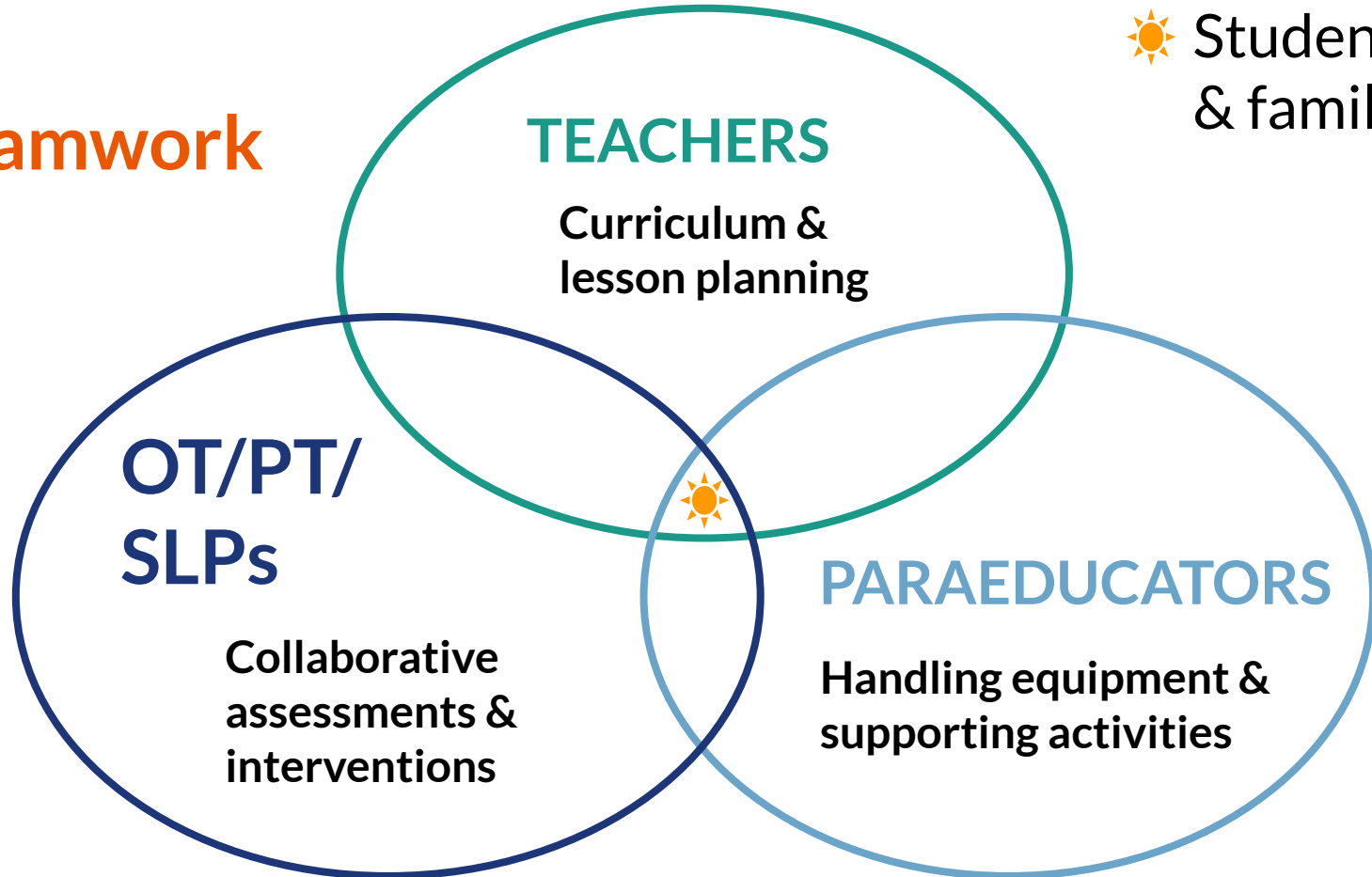
Boston Children's Hospital,  
*Augmentative Comm. Program*




Collaborative and creative approaches to switch access for communication, leisure and academic tasks can produce successful experiences for students with complex disabilities.



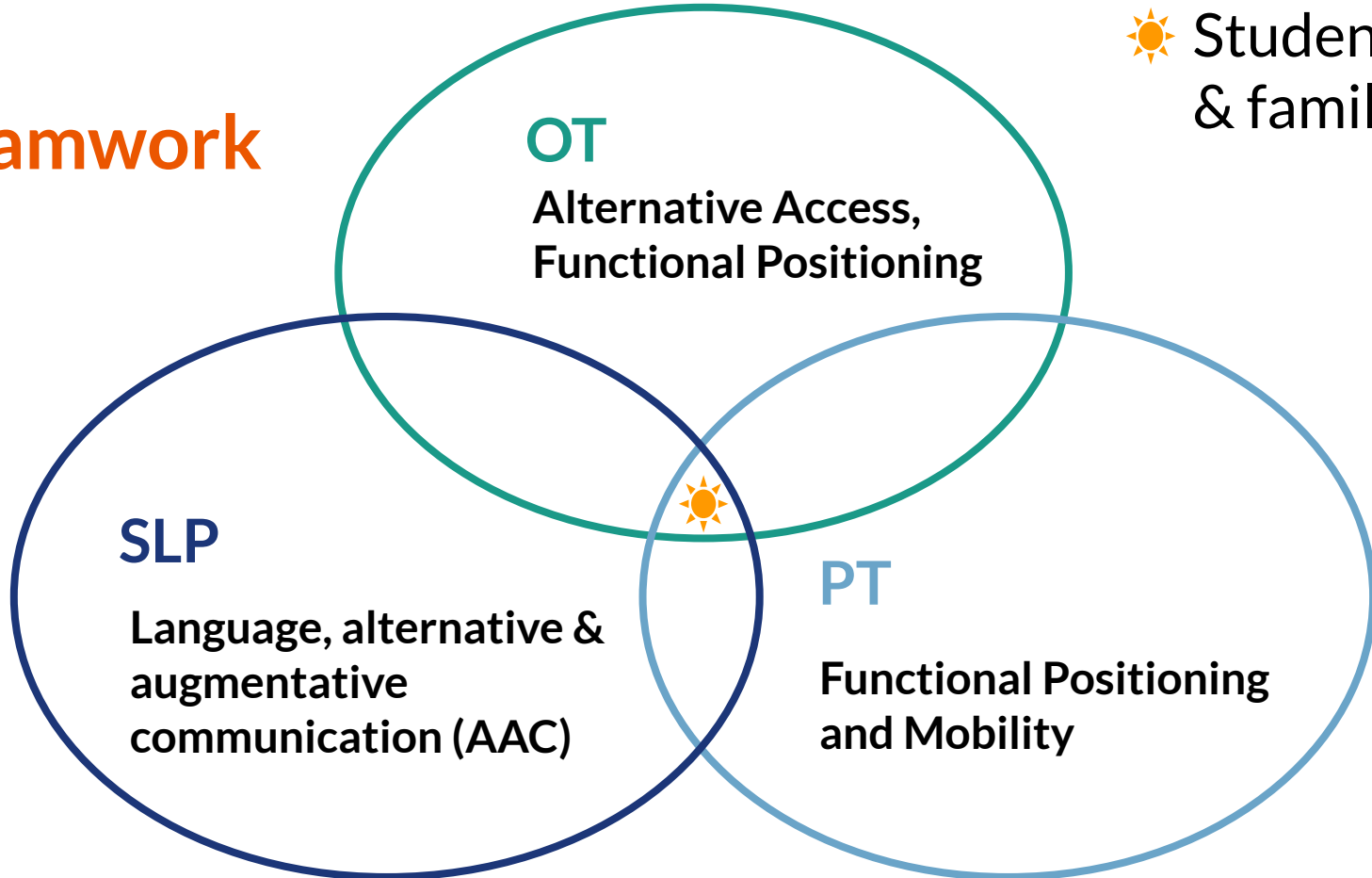
# Teamwork



 Student  
& family

# Teamwork

☀ Student & family



**Collaboration is key.**







**Session 1:** 10/9/19

**Session 2:** 10/16/19

1. Fundamentals
2. Using SETT to Collaborate
3. Balancing Task and Technology

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# Switch-Use Fundamentals

## What is a switch?



- a specialized piece of hardware designed to detect specific movements
- interface between child's movement and function

*By itself, switch does nothing; it needs to be connected to a switch-compatible device.*



# Switches

- Wired or wireless
  - Mechanical (i.e. plates or levers)
  - Pneumatic (i.e. sip & puff)
- ... many types!

Sip & Puff



See handouts,  
i.e. [Ablenet selection grid](#) or  
same from  
[Enabling Devices](#)



Jelly Bean



Smoothie



Micro Light



Ultimate



Saucer



## When to consider switches...

When a student is:

- unable to use standard methods to communicate, demonstrate knowledge, and participate in learning.
- struggling to use isolated movements for direct selection (touchscreen, keyboard, eye gaze).

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## Meet Elsa ... a story about why we'd use switches in the classroom!



- 5 y.o. kinder
- super social & bright
- diagnosis of cerebral palsy
- struggles with communication & motor control
- at risk for limited participation in classroom activities, daily routines at school





# Access Assessment

*Gathering info to select...*

## **Switch type:**

- Size, color, force required to activate

## **Switch site (placement on body):**

- Needs to be reliable, consistent, repeatable movement

## **Additional equipment:**

- Positioning supports
- Computer, switch interface

## **Selection methods:**

- Direct (i.e. touchscreen, keyboard) or Indirect (switch scanning)

In order to be considered a “**functional switch user**” child must demonstrate the ability to get ON the switch, get OFF the switch and REST targeted control site, without accidentally activating the switch, while simultaneously attending to device feedback.



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## Switch-Adapted Toys

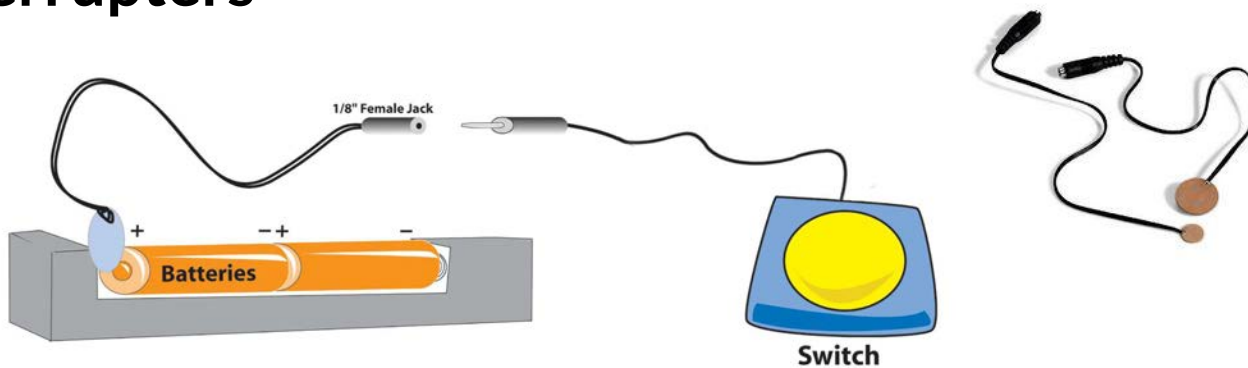


*Can teach...*

- Cause and Effect
- Turn Taking
- Problem Solving
- Increased vocabulary
- Moving through space
- Principles of Science  
i.e. gravity



# Battery Interrupters



- Provides a switch jack that attaches to batteries in toy
- Low cost
- Limited durability

# Powerlink

- control on/off electrical appliances
- used for environmental control, cause & effect



- ❖ Direct
- ❖ Latched
- ❖ Timed

# Switch Scanning



- 1 switch or 2 -> *multiple functions*
- Items in the selection set are presented sequentially over time
- Activate switch to scan or select (a.k.a. “move” and “choose”)



# AbleNet iOS Resources



Accessibility & Switch Control  
User Guides for iOS



Mouse Use

# Switch Scanning

- Choice making -- *activities in classroom*
- Academics -- *multiple choice questions*
- Communication -- *AAC apps*



<http://www.inclusive.co.uk/apps/chooseit-maker-3>

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## Using 2 Switches

*To see where this could lead,  
watch Christopher Hills  
make music on his iPad!*

<https://youtu.be/TLqTNJCHcYo>



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**How can using switches  
support goals?**





# Choicemaking & Requesting

Our students...

- often have minimal opportunities to control their environment or make a choice
- may not know their preferences
- need exposure to activities and items, and practice.

The ultimate goal is to provide the student with ways to **engage in meaningful activities**, such as:

- communicating with peers
- engaging in academic learning activities
- participating in group activities
- accessing leisure activities or lifeskills

**... with increased independence!**

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## It's about access...

*What will they be doing?*



Communicating (AAC)

Writing

Reading

Math

Science

Social Studies

Socializing



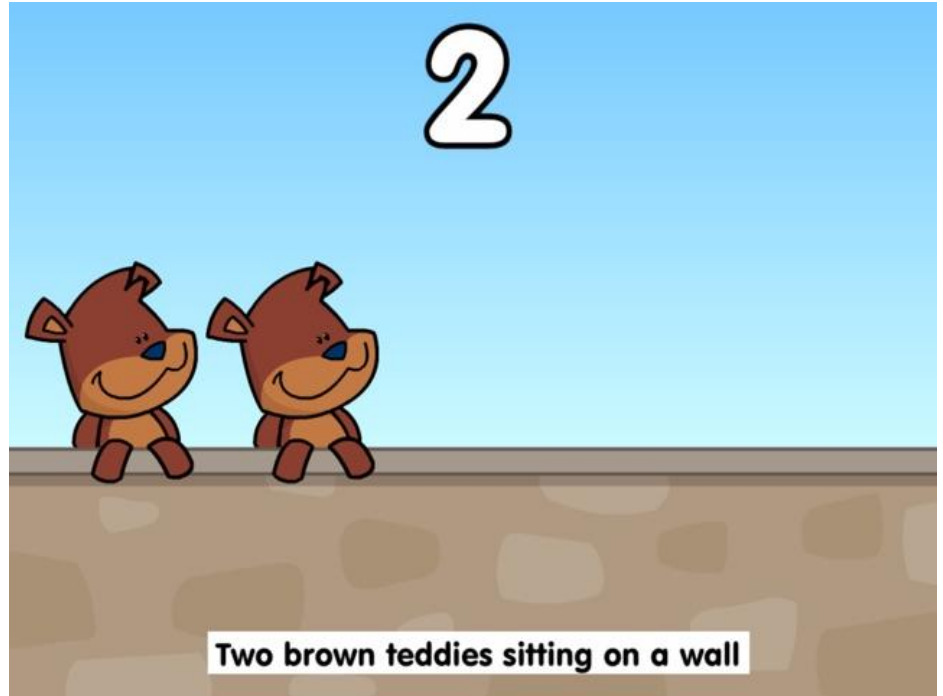
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## Access to Education

Consider what other students are accessing.

There is probably a way to make it switch accessible.

[Counting songs from Inclusive TLC](#)





## HelpKidzLearn from Inclusive TLC

Switch-accessible software  
for early learning:

- Chooselt! Maker 3
- Chooselt! Readymades
- SwitchIt! Apps



## » Switch Progression Road Map

# Road Map for Switch Progression

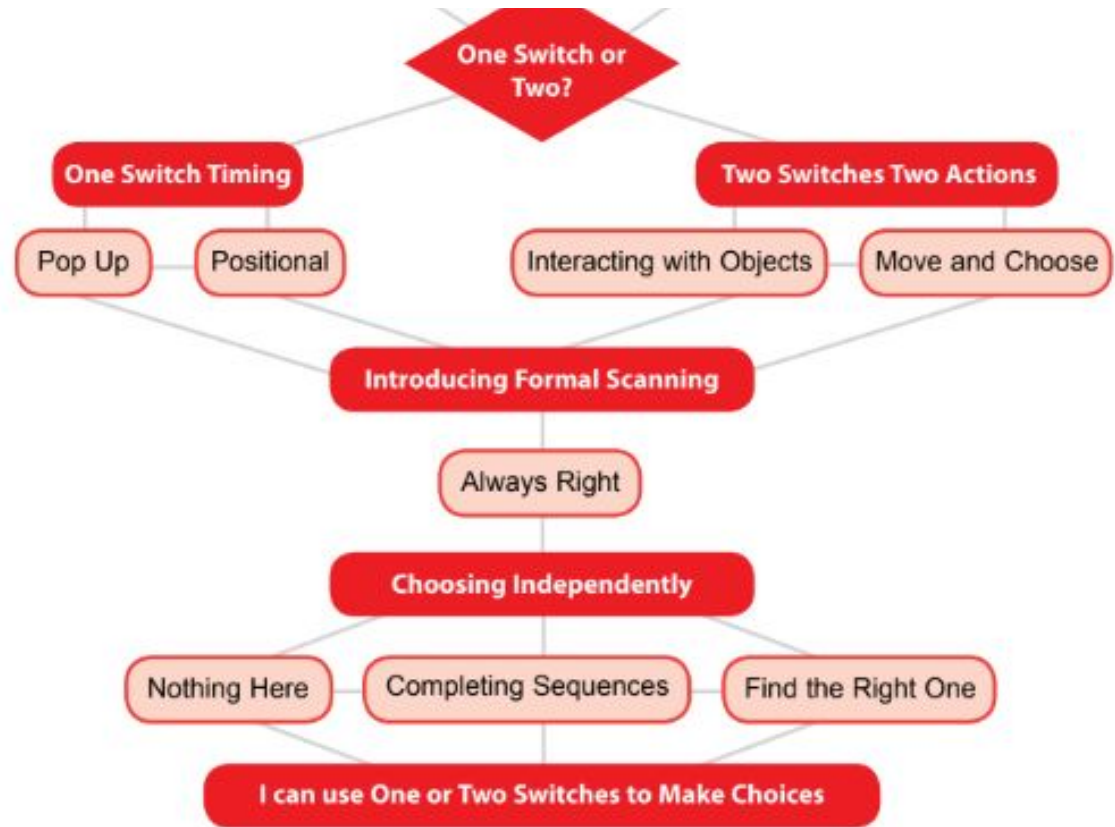
[See full Road Map and description here.](#)

Contains helpful milestones to track student progress.

Bean, I. (2011) Learning Journeys: Switch Progression Road Map, Inclusive Technology Ltd.



The same Road Map contains a selection grid for specific programs targeting each skill.





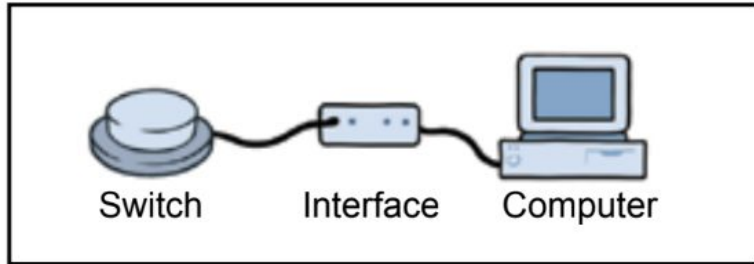


# Computer Access

To connect switch/es to computer requires a switch interface.

These work by converting a switch press into something the computer can understand, usually the press of a key on the keyboard.

# Components of a System w/ Switch Interface



Bean, I. (2011) Learning Journeys: Switch  
Progression Road Map, Inclusive Technology Ltd.

- One or more switches
- Interface, i.e.
  - Switch 2 Scan
  - Don Johnston
- Computer, i.e.
  - iPad
  - Chromebook
  - Other laptop or PC

# Switch Interfaces



Pretorian  
Simple  
Switch  
Interface



Pretorian  
Switch2Scan



Don Johnston Switch  
Interface Pro 6.0

- Wired (USB) or wireless (bluetooth)
- Device compatibility (i.e. works with iOS / iPad or Chromebook)
- Varied settings (may require some light programming to set up)

AbleNet Blue2



# Two Connection Methods

## Wired via USB

→ Plug it in and go!



Don Johnston Switch Interface Pro 6.0



Hook+

## Wireless via Bluetooth

→ Requires pairing & connecting



Switch2Scan



Blue2

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# Settings for Switches on a Computer

Some factors you might need to adjust include:

- number of switches
- scan rate
- size and color of cursor box

Specifics vary by program, student, device, etc.

Look for the gear icons!



Scanning switches have been around for decades and will be for decades to come because they represent an effective means of alternative access for some users with physical impairments.

(Beukelman & Mirenda, 2005)

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# Switches for Communication

- Voice output device (VOD)
- Recordable w/ built in speaker
- Single or sequenced message

*See handouts for 101 ideas of how to use in classroom:*

- [Single message](#)
- [Multi-message](#)



- Can be activated with external switch
- Use for turn taking, verses of songs, lines of a story, joke or poem, etc

# Communication is about...

- Saying what you want to say
- To whoever you want to say it to
- Whenever you want to say it
- Something we don't already know
- Connection and relationships with others





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## Positioning

Switch-users require a consistent place for easy and effective switch access.

A consistent location is essential for motor planning, speed, and accuracy, so the student does not have to visually search for the switch prior to making a choice or interacting with switch controlled toys.



# Mounts

- Flexible
  - Rigid
- ... again, many types!





# Mounting Systems

- Clamps
- Mounting Plates
- Hose
- Cradles





## Tips for Setting Up Mounting Equipment

Communicate with your team about where to place switches for specific students. After initial setup, always check to see if the student can activate the switch as intended.

*Consider* - how does the movement required to hit the switch affect the student's body position or gaze? Does it interfere with the activity (i.e. having to turn and look away from computer screen to search for/activate switch)? What adjustments can you make?

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## Switch-adapted Ride-On Cars



- Provides a way for students to direct their own movement
- Highly motivating
- Stimulates learning

Go Baby Go

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**That's a lot of stuff!**



# SETT Framework

[Click here for blank template.](#)

<b>Student</b>	
<b>Environment</b>	
<b>Tasks</b>	
<b>Tools</b>	



## SETT Framework

- Used as a tool to help collaborative teams gather and organize information in order to correctly identify problems and seek solutions
- Provides a way to build group knowledge about the **Student**, the student's customary **Environments**, the **Tasks** the student must complete to be a more active participant in those environments, and finally, the **Tools** required to support the student in achieving the tasks



## Student:



*What is the functional area of concern?*

*What does the student need to be able to do that is difficult or impossible to do independently at this time?*

- Learning goals
  - Strengths and abilities
  - Likes and dislikes
  - Present levels of performance
  - Evaluation information
- ... related to area of concern



## Environment:

*What are the different environments that the student finds themselves in throughout their school day?*

*Within these customary environments - or within the one where the concern is occurring - what are the supports and barriers in place?*

Consider qualities of instruction, furniture arrangement, available staff supports, equipment- even attitudes and expectations.



# Balancing the Task and the Technology

All switch-users benefit from daily opportunities to get comfortable using switch equipment.

A switch-scanner should be provided with daily opportunities to engage in:

**Errorless Opportunities** - provide a judgment free time to be exposed to and explore new concepts.

**Independent Participation** - allow for the student to actively engage, initiate and direct.

**Supported participation** - challenge the student in an activity in which the student needs and requires assistance to engage.

Caron, Buxton, Rice (2013) "Success with Switches: Balancing Task and Technology"

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## Task:

*What are the tasks that the student is required to complete?*

*What specific things do they need to do to meet expectations and make progress?*

These are the functional aspects of participating in school.





## Tools:

*What are the tools that will best support the student in completing the above tasks within the identified environments?*

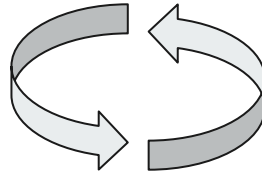
Consider whatever is needed by the **student** and **others** in order to perform the expected tasks and meet expectations.

Regarding students who use switches, who are developing skills to use such equipment, what is needed to provide **daily opportunities to practice**?

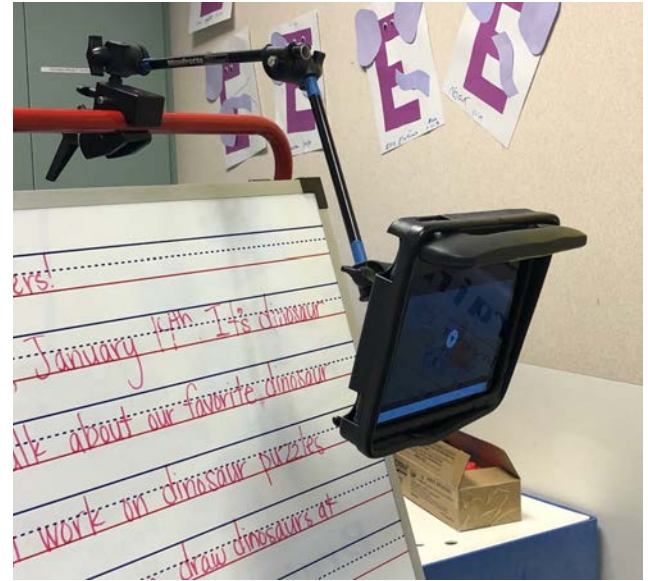
# SETT and RE-SETT



Teach  
Revise



Teach  
Revise





## How do we teach using switches?

Always cue the student by telling them what you are doing, remembering to focus on activity rather than input device; for example, say “more music” rather than “push the switch”.

- Consistency in approach - managing equipment, cueing students - is KEY.
- Communicate with your team to work toward a consistent approach.

Bean, I. (2011) Learning Journeys: Switch Progression Road Map, Inclusive Technology Ltd.

Collaborative and creative approaches to switch access for communication, leisure and academic tasks can produce successful experiences for students with complex disabilities.







# Lessons Learned...

1. **You have to Balance the Task and Technology** - If both challenging, success is unlikely.
2. **Need to be collaborative** - use the SETT framework to guide conversations!
3. **Understand the Goal** - Is it participation, communication, mobility, etc?
4. **Understand the Task** - Is it novel or a review? Does it involve high cognitive or language demands?
5. **Consistency between different programs & different team members** - team communication is key!

Caron, Buxton, Rice (2013) "Success with Switches: Balancing Task and Technology"



## A Few Takeaways

Switch use can make all the difference for some students and be a real game-changer for function, participation, socialization.

Creating lessons with universal design in mind will incorporate ways all students can participate - including those using switches.

**It takes a team approach!**



# Resources

101+ Ideas For Using Single or Sequential Message Communication Devices to Access Curriculum:

[Single message](#) or [Multi-message](#)

[AbleNet iOS Accessibility and Switch-Control User Guides](#)

[Lesson Plan Template for Choicemaking or Other Activities Involving Switches](#)

[SETT Framework Template & "SETTing up staff and supporters to promote student achievement"](#)

[AbleNet Switch Selection Grid](#)

[Switch Progression Road Map](#)



# Discussion



# References

- Bean, I. (2011) Learning Journeys: Switch Progression Road Map, Inclusive Technology Ltd. (ePUB)
- Beukelman, Mirenda (2005) Augmentative & Alternative Communication (book)
- Caron, Buxton, Rice (2013) “Success with Switches: Balancing Task and Technology” (published presentation)
- Leslie, K. (2018) “Switch Access for Early Switch Users” (SETC webinar)
- Racicot, R., Charvet, G. (2015) “Choicemaking with Switches” (presentation shared with permission)
- Russell, S. Buxton, J. (2014) “Access is The Key to AAC” (published presentation)
- Zabala, J (2019) SETT (website) & “SETTing up staff and supporters to promote student achievement” (2005)