

SWITCH SKILLS DEVELOPMENT: BUILD BASIC SKILLS

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What are we covering?

- Switch Skills Development
 - How do I develop switch skills?
 - How do I develop scanning skills? (11/13/18)



What are we covering?

- Switch Skills Development
 - How do I develop switch skills?
 - Strategies to build switch skills once a switch type and location have been identified
 - Developing the required motor pattern
 - Building endurance
 - Automaticity
 - Case studies



Let's get Practical!

- Think of a client you are working with
- As we move through the webinar, think of strategies that may be helpful

Determining Switch Site and Type

- Before developing switch skills, an optimal switch site and type are identified
- Positioning is key
- For more information on Switch Assessment, please refer to archived AbleNet webinars



Determining Switch Site and Type

- If switch skills are “stalling out”, a reassessment may be indicated to ensure optimal switch site and type
- The client who has plateaued may:
 - Be bored
 - Need a different switch placement
 - Need a different switch type
 - Have reached their potential
 - In children particularly, this can change
 - Follow-up is critical



Questions?

Developing Motor Patterns

- Think of touch typing. Fast and accurate typing requires the execution of specific motor patterns
- When you first learned to type, you had to think about where each key was, it was slow and you often hit the wrong key
- Now, hopefully, you don't really think about it
- The motor patterns are well established



Developing Motor Patterns

- Developing a motor pattern or motor learning, such as hitting a switch, requires repetition
- Specifically, the client must:
 - Reach the switch (travel)
 - Activate the switch (force)
 - Release the switch



Developing Motor Patterns

- Motor skill acquisition can be characterized as a slow reduction in movement variability*
 - Improvements in speed and accuracy
 - Repetition leads to improved speed and accuracy
 - Measured by reductions in variability
 - Repetition creates changes in motor and sensory cortical representations, increasing neural signal-to-noise ratio
 - Recruiting more neurons or fine tuning individual neurons

* Shmuelof, L., 2012, "How is a motor skill learned" Change and invariance at the levels of task success and trajectory control. Journal of Neurophysiology 108: 578-594.

Developing Motor Patterns

- The client must switch many times a day to establish a motor pattern
- We know that this will vary with each client
 - Muscle strength, endurance
 - Attention
 - Muscle tone
 - Time limitations



Repetition

- The important consideration is practice
- Practice, repetition, establish and optimize any motor pattern
- Skill development is influenced by many other factors and so varies by individual



Variety

- Variety is key, at least in effect
- Cause is the switch activation
 - We want repeated switch activations to develop motor pattern
- Effect is what happens when the switch is activated
 - Motivating effect
 - Variety of effect



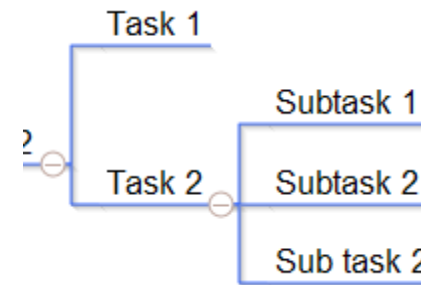
Motivation

- Motivating
 - Talk to the client, caregiver and team members and find out what is motivating
 - Turn this into a simple switch activity



Breaking Down the Task

- Break down the task
- Our goal is developing the motor pattern
 - Not scanning (yet)
 - Not a complex task
 - Just an effect



Basic EADLs

- So let's get to some examples!
- Battery operated toys & simple electrical devices
 - Direct mode requires sustained switch activation
 - We are developing a motor pattern, so a momentary activation is preferred



Switch Timers

- Battery Operated Toys
- With Switch Timer
 - Latch – often the client doesn't want to turn this off



Simple Electrical Devices

- Simple Electrical Devices
- With Switch Timer
 - Latch – often the client doesn't want to turn this off
- Example: PowerLink
 - Remember to provide a variety of devices to maintain interest



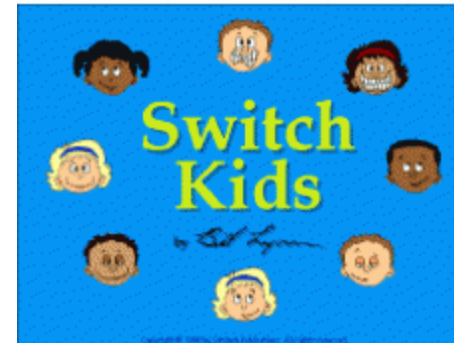
Switch Adapted Devices

- Specific switch adapted devices
 - Some devices don't work with Switch Latch and Timers or PowerLinks
 - Music
 - Enabling Devices
 - CD Boom Box
 - Adapted 2 switch docking station



Single Switch Software

- Computer
- Single Switch Software
 - Cause and Effect
 - Many options out there to match a client's interests and provide variety



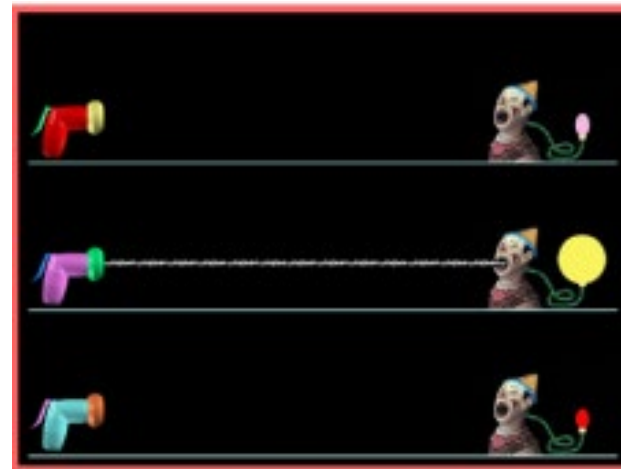
Single Switch Software

- What is required?
- Switch Interface
- Switch



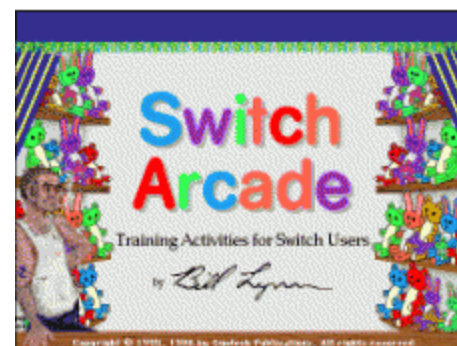
Single Switch Software

- Marblesoft
 - Desktop Software categories
 - Cause and Effect
 - Switch Training
 - Accessible Games
 - Adult appropriate



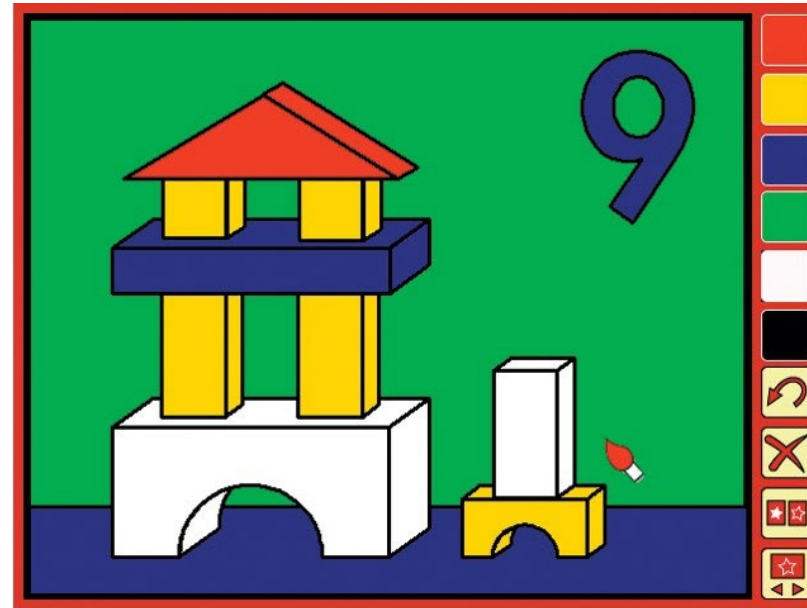
Single Switch Software

- Marblesoft Examples:
 - Switch Arcade
 - Switch Wars
 - Switch Puzzles
 - SoftTouch



Single Switch Software

- Inclusive TLC Examples:
 - 1-2-3 Paint
 - Big Bang
 - Press to Play
 - SwitchIt! Facemaker



Tablets and Apps

- Tablets and Switch Access
 - Instead of the computer, use a tablet!
 - More and more Apps are available that can be controlled by a single switch
 - And that are designed to work on the same skills as single switch software
 - Advantages:
 - Many families have a tablet at home
 - Apps are inexpensive
 - Disadvantage:
 - May need BlueTooth switch



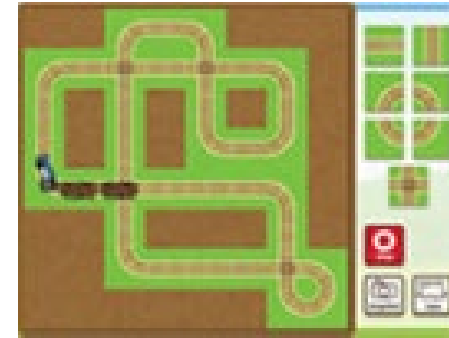
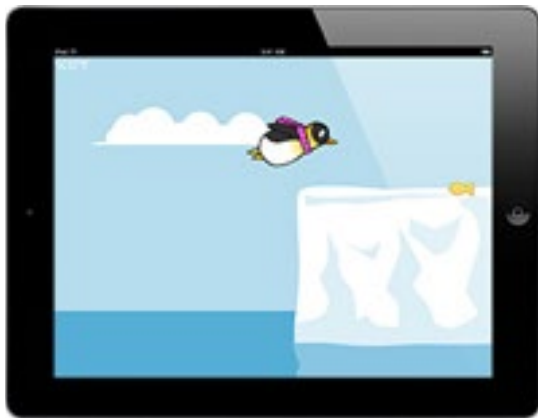
Tablets and Apps

- Tablets and Switch Access
 - Marblesoft (all iOS at this time)
 - Sights & Sounds series
 - Cars
 - Ants, fireworks, flowers, orbs, popcorn
 - Switch Accessible Puzzles
 - Switch Kids
 - More



Tablets and Apps

- Tablets and Switch Access
 - Inclusive TLC
 - Inclusive has Apps for iOS and Android
 - Some are designed for single switch access
 - Examples:
 - Space Shooter
 - Little Lost Penguin
 - Train Tracker



Tablets and Apps

- Tablets and Switch Access
 - Use with a Blue Tooth Switch
 - AbleNet Blue2
 - Or other switch interface



Questions?

Building Endurance

- Some switch sites require movement with muscles that the client hasn't used purposely in the past
- Sometimes the client is using very small muscles
 - i.e. Kelly, dorsiflexion
- The client may require a gradual program to build the motor pattern as well as strength and endurance



Questions?

Automaticity

- Our ultimate goal is to make the switch access automatic
- We want the client to think about where to drive, what to say, what to control... not where the switch is
- Example: driving
- How to reach automaticity?
 - Practice, practice, practice
 - Time, time, time



Questions?

Case Study

- Colton
- 3 years old
- Diagnoses
 - Periventricular Leukomalacia
 - Genetic condition
 - Mosaic duplication of chromosome 15
 - CVI
 - Seizures
- No switch access
- Goal - communication



Colton

- Switch Site
 - Team had been trying a switch by Colton's right hand with assistance
 - Colton could not access this independently
 - He needed positioning to support him to be as functional as possible
 - An evaluation was completed and a molded seating system was recommended due to very low tone in the trunk



Colton

- Previous seating was in Kid Kart Voyage (adaptive stroller) and Special Tomato seat
- New seating was molded and placed on tilt manual wheelchair base



Colton

- Colton was able to access an AbleNet Jellybean by the left side of his head near his cheek, even from sub-optimal positioning
- He tends to lean to his right side, so this was not a great switch site
- It was sensitive enough to activate with his movements
- It had good auditory feedback



Colton

- Colton now uses an AbleNet Spec switch mounted to his head support by the left side of his head



Maddox has the same switch placement!

Colton

- This was a completely new movement for Colton
- Colton had never used his head in this way
- This was a difficult movement for him to do over the day
- This movement fatigued easily

Colton

- Colton needed opportunities to establish a motor pattern before using this switch for control of a speech generating device
- He needed to gradually build endurance
- He needed to develop automaticity

Colton

- A variety of activities were set-up for access from the manual wheelchair
 - Switch accessible toys
 - Switch control of simple devices
 - i.e. light up mirror
 - Single switch software
 - Music



Colton

- After time to develop this motor pattern, build endurance and begin to develop automaticity, an augmentative communication evaluation was completed
- He was able to transfer his switch skills to control of an SGD
 - Scanning training was also provided
 - Next webinar...



Take Home Message

- Some clients are able to use a switch functionally with little or no training
- Other clients require specific training to build switch skills, specifically:
 - The motor pattern
 - Endurance
 - Automaticity
- Lack of training may result in poor outcomes

Let's get Practical!

- Remember that client you were thinking of?
- Did you think of any useful strategies to try?
- Write them down, give them a try and let me know how it works!

Activity Idea

- Purchase an inexpensive Switch Training App and try it out with a client!

Questions?

Thank You!

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