

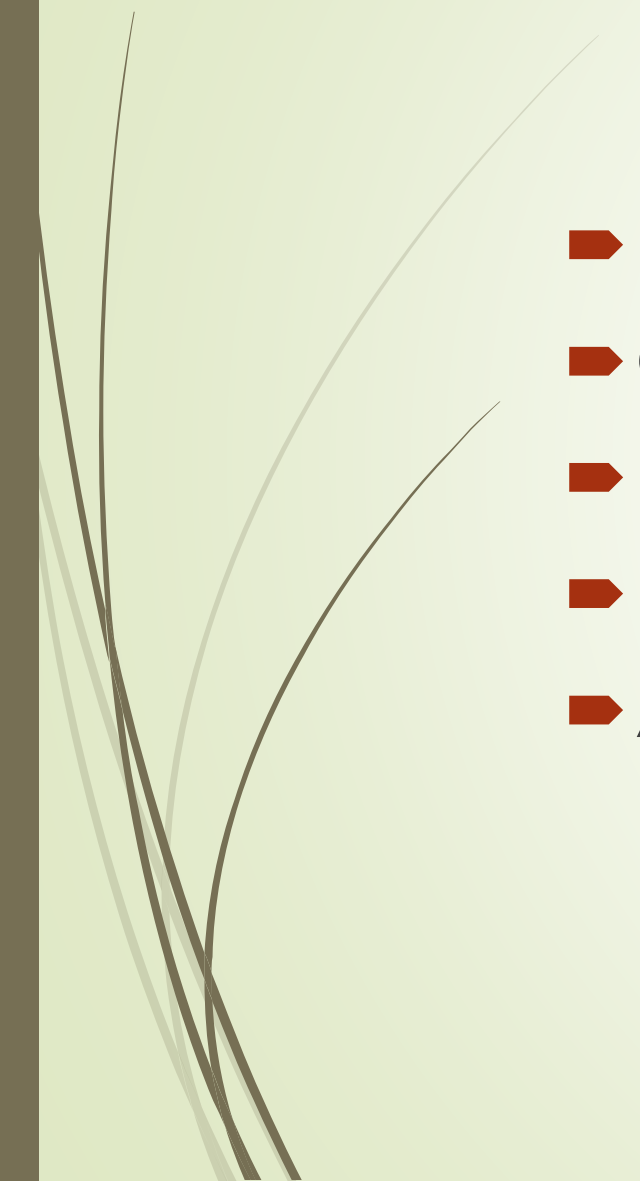
Strategies that enable learning

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Research related to learning

- People with multiple and complex disabilities
 - Growing consciousness of tool use
 - Identification of the learning process
 - Learning activities
 - Assessment of tool use learning
- 



A guiding citation

“A deep ingrained value of occupational therapy is the belief in capacity and the therapist’s obligation to tease out that capacity. No capacity or potential is too small or insignificant to warrant support. Moreover, there is a tough-minded conviction in the potential of persons, even when that potential is not readily apparent” (p. 73).

Kielhofner, G. (1992) Conceptual foundations of occupational therapy. Philadelphia: F. A. Davis.

Driving to Learn in a powered wheelchair

- Development of method
- Instrument - assessment of joystick-use
- Strategies facilitating understanding of tool use
- Design of Tiro – the learning tool
- Discovery of a theory of de-plateauing

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What can be achieved from practice in a powered wheelchair?

First study – two preschoolers with multiple and complex disabilities

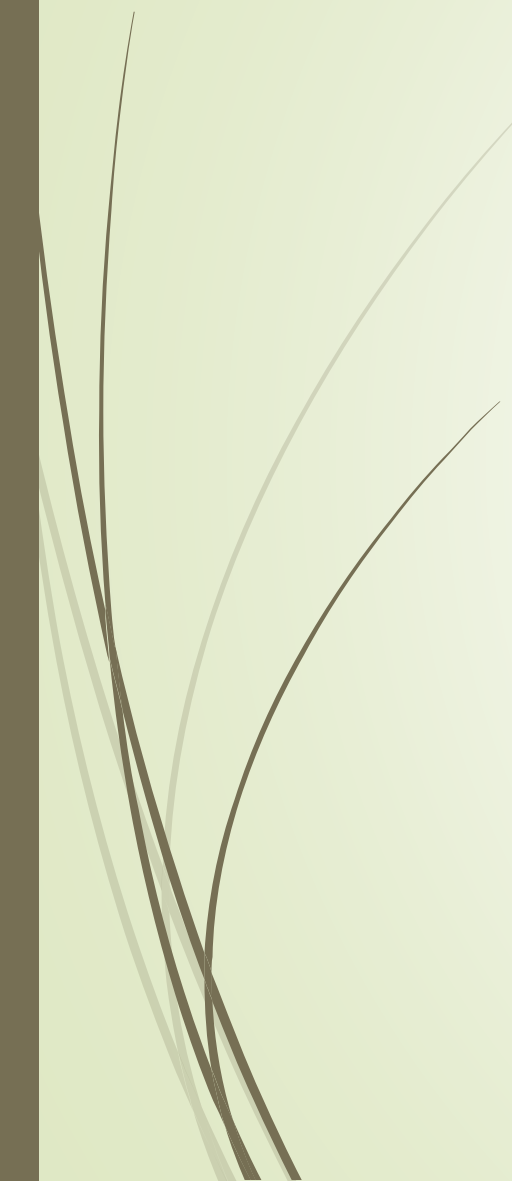
Video – boy aged 4 years first test in powered wheelchair

January 1993





Contributing partners in exploration

- Persons with cognitive disabilities
 - Their parents and relatives
 - Their closely related care-givers
 - Colleagues in rehabilitation and education
- 

Free driving
Playfulness
Interaction
Communication

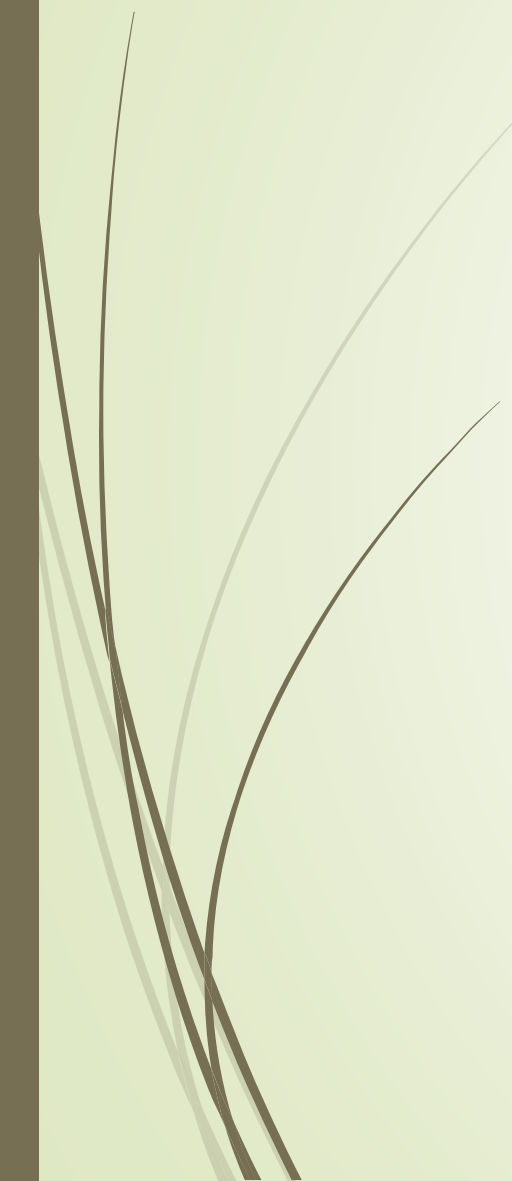
After 2,5 years of practice
in a powered wheelchair

Video – boy aged 7 years
August 1995





Discovery of the learning process

- Direct observation
 - Video recordings
 - Repeated video observation
 - Looking for signs of change
 - Comparisons with infant development and performance
 - Searching for patterns
- 

Comparisons with infant performance

Infant development

Early tool use learning

Problem-solving

Play

Video –

typically developing infant
aged 3 months 10 days





Growing consciousness of joystick-use

A process of increasing understanding and awareness of

- ▶ Tool functions and effects

What it is used for

- ▶ Sequencing of acts, effects in functional tool use patterns

How it is used in a goal-directed, purposeful way

- ▶ Tool use performance in activity

How to integrate its use in everyday activities



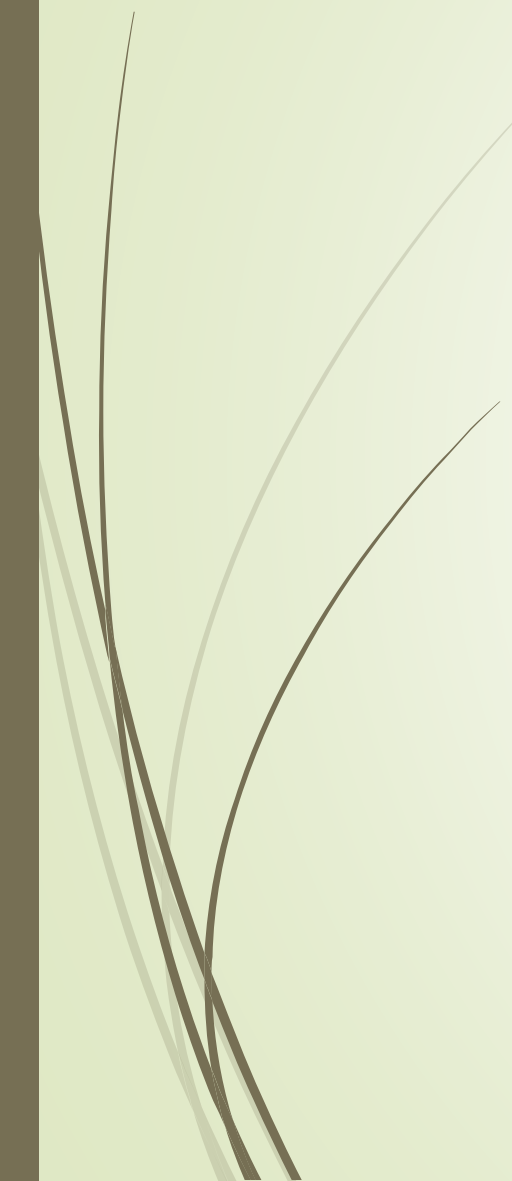
Learning communication by driving

*“The findings included two lines of development: (1) growing consciousness of joystick-use and powered mobility use, and (2) **learning communication by driving**. An emerging approach for facilitating tool use learning also nurtured the participants' alertness, attention to social exchange, development of sense of self, anticipation, intentionality and a will in mind that was communicated through showing by driving.”*

Nilsson, L. (2011). Communication Mediated By A Powered Wheelchair: People With Profound Cognitive Disabilities. Disability Studies Quarterly, (31)4



Learning activities

- ▶ Learning is a part of human activity
 - ▶ Everyday activities often involves tools or artefacts
 - ▶ A learning activity can be as simple as self-feeding
 - ▶ Awareness of what are the learning aspects in an activity helps in taking advantage of learning opportunities
- 



Powered mobility use – a learning activity

- ▶ Use of hands and body – motor control
- ▶ Use of vision and other senses
- ▶ Learning about relationships
 - ▶ Cause and effect, Space and Time
- ▶ Developing interaction and communication
- ▶ Turn taking, choice making
- ▶ Ordering and timing of acts
- ▶ Building activity patterns
- ▶ Handling emotions – frustration



Assessing outcome and progressing learning

- ▶ Knowledge of learning process
- ▶ Identification of actual level of performance
- ▶ Goal setting
- ▶ Just right challenge
- ▶ Evaluation

Nilsson & Durkin (2014). Assessment of powered mobility use – applying grounded theory to occupational performance. Journal of Rehabilitation Research and Development, (51)6, 963-974.



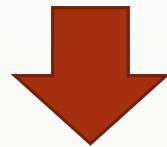
Assessment of Learning Powered mobility use – the ALP tool

ALP is a process based assessment tool

- ▶ direct observation of occupational performance



- ▶ assessment of actual phase in the learning process



- ▶ outcome guides the choice of facilitating strategies

ALP-instrument, version 2.0 – short

(Nilsson & Durkin, 2014)

Phase	Attention	Activity & Movement	Understanding of tool use	Expressions & Emotions	Interaction & Communication	STAGE
8	Attention well established and sustained	Occupation composed of two or more activities	Integrated tool use	Dependent on the doing of other activities	Multi-level integrated interactions	PERFORMANCE Explore Body, machine, environment, & occupation
7	Multi-channelled attention Generally focused	Occupation for its own sake	Fluent precise use of tool	Happiness Satisfaction	Concurrent interactions	
6	Multi-channelled attention but easily disrupted	Activity Goal-directed	Competent use of tool	Serious Contented Laugh Excited	Consecutive interactions	
5	Two-channelled attention	Sequences of chains of acts	Idea of competent tool use is born	Eager, smile Serious Frustration	Reciprocated interaction Triadic interaction	SEQUENCING Explore Body, machine, & environment
4	Single channelled attention but able to shift spontaneously	Chains of acts	Exploration of extended tool use	Serious Smile Sometimes laugh	Mutual interaction	
3	Single channelled attention but able to shift attention	Act directed	Basic use of tool	Serious Contented Smile	Initiates interaction	FUNCTIONS Explore Body, & machine
2	Single channelled attention	Pre-act	Idea of basic tool use is born	Contented Curious Anxious Angry	Responds to interaction	
1	Extreme distractibility Passive or anxious	Excited Non-act Rejection	No or vague idea of tool use	Open Neutral Anxiety	No response Avoidance	



ALP – facilitating strategies

- ▶ Approach as facilitator
 - ▶ Dialogue, mutual interaction, building partnership
 - ▶ Co-construction
- ▶ Strategies for each stage and phase in learning
 - ▶ Tool use and tool interaction
 - ▶ Social interaction
 - ▶ Frustration
 - ▶ Language use
 - ▶ Encouraging own initiatives and trials

Progression through the eight phases of learning powered mobility use



ALP adapted for AAC



Responses from AAC clinicians

Early Feedback... “The ALP for AAC lets me...”



See a Path



Quantify Progress

Quantify Current
Level of Ability



Guide Activity
Choices



Learning process for eating with spoon

- Exploration of how to grasp and hold the spoon
- How to load food on the spoon
- How to make the food stay during transportation to the mouth
- How to hit the mouth with precision
- Experimenting with approach & performance
- Multi-tasking – eating and interacting with others
- Positioning and timing – able to eat soup
- Varying performance to match situation





De-plateauing

When a person exceeds own or others pre-conceived expectations for development and learning

- Motivation
- Endurance
- Responsivness
- Adaptability
- Access to resources with high predictability and usability

Nilsson, L. (2007). *Driving to Learn. The process of growing consciousness of tool use – a grounded theory of de-plateauing*. Dissertation, Lund university, Sweden

Enabling tool use learning

Cognizing for tool use learning is the process of perceiving, becoming aware of and knowing how a tool can be used.

- Motivation
- Confidence
- Permissiveness
- Attentiveness
- Co-construction



Nilsson & Durkin (2017). Powered mobility intervention: understanding the position of tool use learning as part of implementing the ALP tool. *Disability and Rehabilitation: Assistive technology*



Strategies for learning

- Create a trustful partnership
- Mutual interaction, communication and dialogue
- Co-construct the situation
- Look for minor signs of change
- Link right stimulation with desired reactions
- Connect responses with all possible interpretations
- Share responsibility, make agreements and develop judgement

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