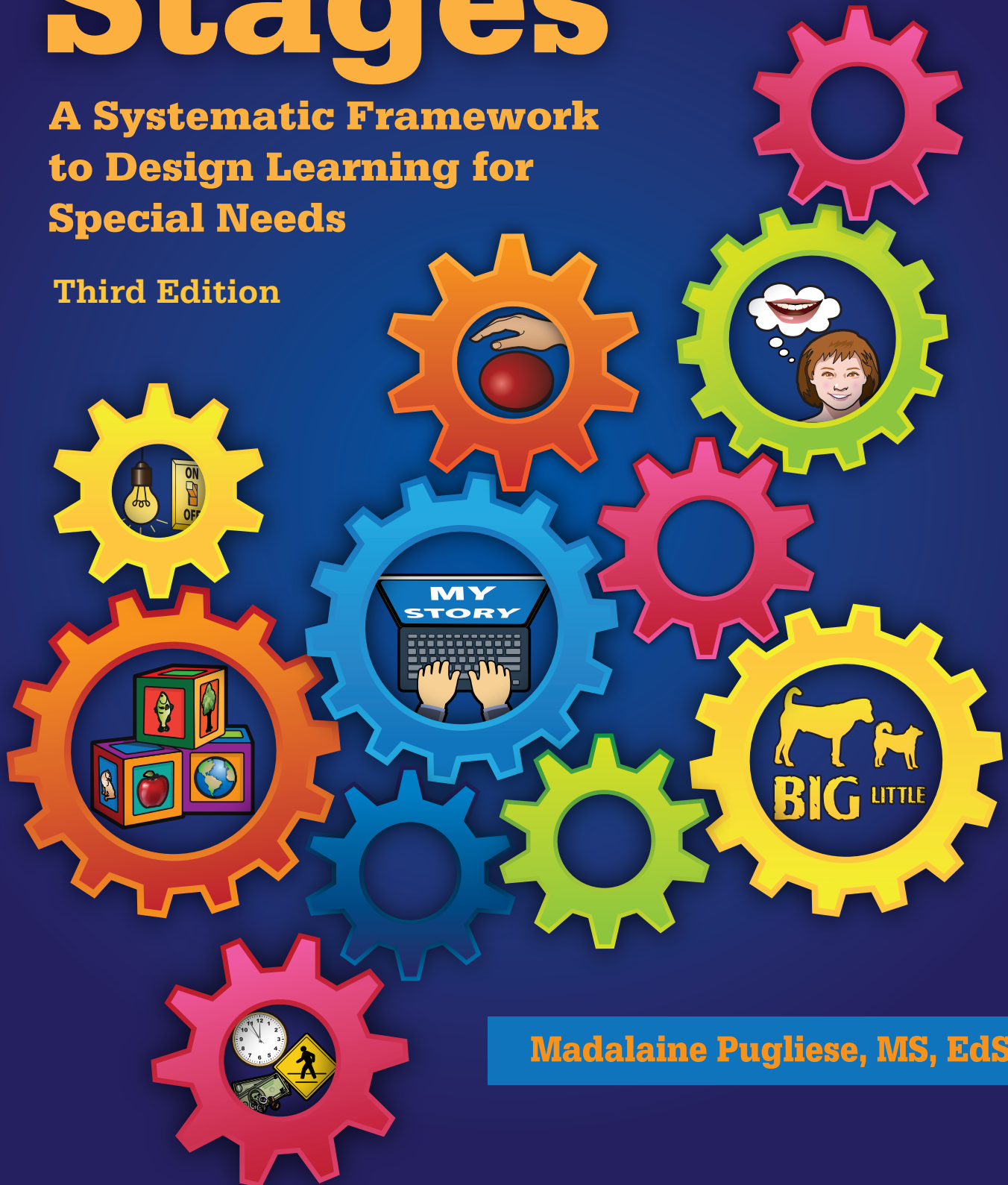


Attainment's

Stages

**A Systematic Framework
to Design Learning for
Special Needs**

Third Edition

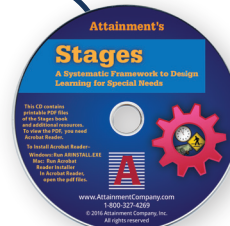


Madalaine Pugliese, MS, EdS

The PDF disc contains printable PDF files of

Stages

PDF reader software is required to view the PDFs.
Acrobat® Reader® Software is included on the disc.



Stages

A Systematic Framework to Design Learning for Special Needs

by Madalaine Pugliese MS, EdS

Graphic Design by Beverly Sanders
and Heidi Barnhill

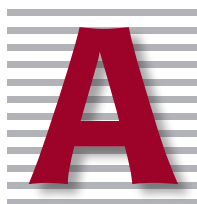
An Attainment Company Publication

© 2016 Attainment Company, Inc. All rights reserved.

Reproducible resources within this material may
be photocopied for personal and educational use.

Printed in the United States of America.

ISBN: 1-943148-44-9



Attainment Company, Inc.

P.O. Box 930160

Verona, Wisconsin 53593-0160 USA

1-800-327-4269

www.AttainmentCompany.com

Table of Contents

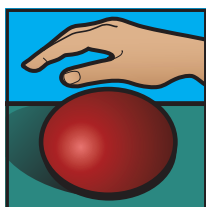
Preface	1
How This Project Originally Started	1
About This Book	2
About the Stages Framework	3
From a Series of Handouts to a Comprehensive Project	4
New Perspectives: a 15-Year Anniversary	5
There is Still No Magic Wand	5
Mobile Devices and Apps	5
Computers and Software	6
Manipulative Materials and Accessibility (Tactile)	6
Accessibility and Assistive Technology	7
What Is Accessibility Today?	7
Operating Systems Offer Built-in Solutions	7
Assistive Technology Evaluation vs. Consultation	8
Curriculum Trends	9
What Is Standardized Curriculum Access	9
Universal Design for Learning	10
Publishers Offer Research-Based Adapted Curriculum Materials	10
If Digital Materials Are Hard to Find, Customize Your Own	12
Assessment and Evaluation Trends	13
The Challenge of Monitoring Progress	13
Collecting Evidence	14
National Models	14
Dynamic Learning Maps™ (DLM®) Project	14
National Center and State Collaborative (NCSC)	15
State and Local Models	16
Professional Development Trends	17

Introduction.19

About Stages: A Complete Solution	19
The Seven Stages	20
Using This Book	22
About Our Target Learners	24
About the Case Studies	25
Communication in General	25
General Considerations for Digital Learning Materials.	26
Other Digital Materials Selection Criteria	27
Getting the Apps That Accompany This Book	28

Develop the Language Foundation: Behavior and Language for Learning29

Stage One - Cause and Effect.31



About This Stage.	31
About the Learner	31
Observable Characteristics	31
Emotional Side of Learning	32
Competency Goals.	33
Sample IEP Objectives	33
Case Study	34
Relevant Issues.	35
Adaptive Hardware	35
Device Use	35
Communication Strategies.	37
About the Software	37
Types of Learner Prompts	38
Adult Guidance	39
Monitoring Learner Performance	40
Software Selection Tips	41
Extension Activities Away from Technology	41
Off-Device Ways to Address Stage One Skills.	41
Moving to the next Stage	42
Learning Materials to Consider	43
Manipulative Materials and Guides	43
Software	43
Apps.	43
References for Stage One.	45

Stage Two – Language Readiness47



About This Stage.	47
About the Learner	47
Observable Characteristics	47
Emotional Side of Learning	48
Competency Goals.	48
Sample IEP Objectives	49
Case Study	50
Relevant Issues.	50
Building Receptive Vocabulary.	51
Emerging Literacy and Phonemic Awareness Begins.	51
Adult Guidance	52
Communication Strategies.	54
About the Software	55
Software Selection Tips	56
Extension Activities Away from Technology	56
Representation of Objects	57
Familiar Objects in New Settings	57
Imitation Skills	58
The Learner's World.	58
Moving to the next Stage	58
Learning Materials to Consider	59
Manipulative Materials and Guides	59
Software	59
Apps.	60
Bundled with This Book from Attainment	61
References for Stage Two.	62

Stage Three - Emerging Language65



About This Stage.	65
About the Learner	65
Observable Characteristics	67
The Emotional Side of Learning	67
Competency Goals.	68
Sample IEP Objectives	68
Case Study	69
Relevant Issues.	69
Assessing Language Skills	70
Generalizing Language and Vocabulary	70
Adult Guidance	71
Communication Strategies.	72

About the Software	73
Focus on Content.	73
Adjusting Software Settings	74
Software Selection Tips	74
Extension Activities Away from Technology	75
Fun Away from the Computer or Mobile Device	75
Moving to the next Stage	76
Learning Materials to Consider	77
Manipulative Materials and Guides	77
Software	77
Apps.	77
Bundled with This Book from Attainment	81
References for Stage Three	82

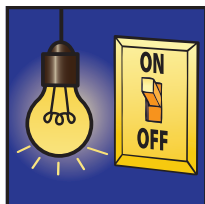
Academic Discovery: Align with Standards for Learning. . . 85

Stage Four - Early Concepts 87



About This Stage.	87
About the Learner	87
Observable Characteristics	87
The Emotional Side of Learning	88
Competency Goals.	89
Sample IEP Objectives	89
Case Study	91
Relevant Issues.	91
Academic Readiness Encourages Exploration	91
Social Development and Play.	92
Communication Strategies.	92
About the Software	93
Academic Readiness	93
Literacy Readiness	93
Math Readiness	94
Software Selection Tips	95
Extension Activities Away from Technology	95
Solidifying the Academic and Social Foundation	95
Moving to the next Stage	96
Learning Materials to Consider	97
Manipulative Materials and Guides	97
Software	97
Apps.	98
Bundled with This Book from Attainment	102
References for Stage Four	104

Stage Five - Advanced Concepts and Communication105



About This Stage.	105
About the Learner	105
Observable Characteristics	106
The Emotional Side of Learning	107
Competency Goals.	107
Sample IEP Objectives	108
Case Study.	109
Relevant Issues.	109
Accessibility Is Critical	109
Content-Rich Curriculum.	111
Communication Strategies.	115
About the Software - Content Rich Learning.	115
Adjustments Increase Versatility of Software.	116
Software Selection Tips	116
Extension Activities Away from Technology	117
Moving to the next Stage	117
Learning Materials to Consider	118
Manipulative Materials and Guides	118
Software	119
Apps.	120
Bundled with This Book from Attainment	125
References for Stage Five.	127

Stage Six – Functional Learning129



About This Stage.	129
About the Learner	129
Transitions.	129
Higher Education	130
Observable Characteristics	131
The Emotional Side of Learning	132
Competency Goals.	132
Sample IEP Objectives	132
Case Study.	133
Relevant Issues.	134
Functional and Independent Living Skills.	134
Communication Strategies.	135
About the Software	136
Software Selection Tips	136
Extension Activities Away from Technology	137
Use of Manipulative Materials	137
Extending the Learning	137

Moving to the next Stage	138
Learning Materials to Consider	139
Manipulative Materials and Guides	139
Software	140
Apps.	141
Bundled with This Book from Attainment	145
References for Stage Six.	146

Stage Seven - Written Expression.149



About This Stage.	149
About the Learner	149
Observable Characteristics	150
The Emotional Side of Learning	150
Competency Goals.	150
Sample IEP Objectives	151
Case Study	152
Relevant Issues.	152
Using Manipulative Materials.	153
Writing Opens Doors for Learners.	154
Reading and Writing as Parallel Skills.	154
Stepping Stones toward Independent Writing	155
Communication Strategies.	157
About the Software	157
Importance of Auditory Feedback or Multisensory Writing	158
Software Selection Tips	158
Extension Activities Facilitating Technology – The Alternative Pencil	159
Learning Materials to Consider	160
Manipulative Materials and Guides	160
Software	160
Apps.	160
Bundled with This Book from Attainment	163
References for Stage Seven	164

Stages Connections167

How Stages Supports Many Types of Learners	167
Autism	167
Developmental Delay.	167
Cognitive Delay	168
Sensory Challenges.	168

Neurological and Physical Challenges	168
Emotional Challenges	168
Communicative Challenges	169
How Stages Supports Professionals and Families	169
Special Education Administrators	169
School Principals	170
Special Education Teachers and Inclusion Specialists	170
Speech–Language Pathologists	171
Assistive Technology Professionals	171
Technology Directors and Curriculum Specialists . .	171
General Education Classroom Teachers.	171
Special Education Paraprofessionals	171
Parents and Families	172
How Stages Connects with the Law	172
Observable Skills Checklists	175
Vintage Software Directory	183
Resources	206
About the Anne Carlsen Center	209
About the Author	210

Preface

How This Project Originally Started

The Stages framework and supporting materials have evolved to become a powerful alternative assessment and materials-selection methodology in support of learners with cognitive and language delays. The original concept was developed more than 25 years ago. Since then it has continued to grow as I have held decision-making positions in local, state, and national projects that resulted in furthering the use of assistive technology in special education and in general services for individuals with disabilities.

Support for these communities primarily took the form of handouts created for special purposes, such as software recommendations for certain populations. These documents, collected and organized according to my own carefully researched philosophy, became the foundation for Stages.

In the 1983–84 academic years I became the director of one of the country's first formal assistive technology programs in public education for the Boston Public Schools. Efficient strategies were needed to support approximately 64,000 learners in special education in about 130 schools. At this time, I formed the structure for what has become the Learning Materials Charts scattered throughout the book, an integral part of Stages.

Later, as the software specialist at the Abilities Expo, an annual event in several cities across the country, I found that families frequently asked questions similar to those being raised in the schools. For example, I often heard, “My child can press the switch reliably. Now what?” or “Our child can use an alternative computer keyboard to access a computer. What software would help her keep up in school?” However, enthusiastic participants demanded that the ideas be expanded over a wide age range and beyond the school perspective.

Next, I helped create a highly successful, award-winning, statewide assistive technology program in Massachusetts. Again I found a similar approach to materials recommendations to be most effective, this time on a state level. How do I help with recommendations for learners that I never met? The most effective

approach proved to be facilitating the match between the needs of the learner with the features offered in learning materials.

Finally, I developed and served as director for one of the few assistive technology graduate degree programs in the United States at Simmons College. As director I helped shape decision-making abilities within my graduate students and brought strategic direction, cutting-edge tools and skills to the program.

As I investigated the most appropriate materials for learners with special needs, I began to isolate specific challenges that many learners faced when starting to use technology to build language and cognitive skills. Patterns arose as to the succession of skills they needed to build. Seven distinct areas of focus emerged, which became the seven Stages.

Thus, the stages of development described in this book are offered in the context of materials selection as well as teaching strategy. This body of work evolved from these consistently asked questions regardless of the individual's age or the learning environment. Whether the learner is in a school setting, clinical program, community-based activity or the home environment, cognitive and language development skills can be successfully addressed using technology as the vehicle for content delivery and practice interactions.

More than 25 years after creating some of the original software recommendation handouts, this framework still proves to be a most efficient and effective way to communicate about great programs and learning materials. Repeatedly I have found that utilizing the right materials can make all the difference in planning effective assistive technology-based learning experiences.

Assessments help gather the information needed to develop an Individualized Educational Plan (IEP) and facilitate appropriate curriculum planning. Technology is a wonderful vehicle to consider when designing access to an assessment environment.

About This Book

For this third edition, Stages recommendations are expanded to include a variety of suggestions for curriculum materials that help learners target the skills specified at each developmental Stage. Observable Characteristics checklists of the learner behaviors and Competency Goals that facilitate that body of knowledge

are updated and included for each Stage. Sample Individualized Educational Plan (IEP) Objectives are suggested for each Stage, and a description of relevant issues at each Stage is included. A glossary, listing of Internet resources, resource directory and vintage software recommendations are offered as appendices.

This revised edition incorporates a range of research efforts completed since the book was first printed. Areas studied in the formation of the language foundation philosophy (Stage One through Stage Three) primarily focus on child development, language acquisition, augmentative communication, and early literacy. Areas studied in the formation of the academic discovery philosophy (Stage Four through Stage Seven) primarily focus on the most contemporary curriculum and skill content resources in today's educational research. These include the National Reading Panel Report, effective writing skill development, and learning theory published by the National Council of Teachers of Mathematics (NCTM). In this way, the skills addressed in Stages correlate with locally mandated curriculum standards throughout the United States.

About the Stages Framework

The Stages framework addresses language and cognitive development in learners in a new way. In creating this framework, I have been influenced by others who have studied learning, language, and skill acquisition.

Educational psychologist Jean Piaget gave us a structure for looking at typical children and following their cognitive development. An influential work offering a similar structure is Dr. Mary Wilson's Sequential Software for Language Intervention and Development, which contains a Linguistic Hierarchy. Within this structure, Dr. Wilson discusses language acquisition and references typical developmental sequences and chronological patterns. The work of Noam Chomsky furthers the understanding of language acquisition as well as the nature of developing word use. Speech-language pathologist Barb Adams also worked toward sequencing language development skill acquisition and encouraged me to further develop the notion of incorporating cognitive skills at the same time.

The Stages framework differs from developmental sequences and is more appropriately called systematically organized strategies for the following reasons:

- It is written specifically for learners who we already know experience developmental delay.
- It is deliberately not referenced chronologically, but instead suggests an appropriate learning sequence regardless of age or grade level in school.
- It is designed around observable and measurable milestones, competencies, or behaviors.
- It combines cognition and language skills (as opposed to separating them).
- It recommends both digital materials selection strategies as well as off-computer activities that address goals and observable characteristics of learners, covering a range of skill areas.

From a Series of Handouts to a Comprehensive Project

Stages began simply as I tried to answer questions from teachers and parents who wanted to give their learners the best opportunities for success. Now it is a comprehensive effort, guiding learners, educators, therapists, and families far beyond its original concept.

Thanks go to Assistive Technology, Inc. (now Tobii) for the original first publication of both this book and accompanying software. More thanks go to Cambium Learning who published the second edition and updated the software. As an educator with an idea, finding publishers such as these is an absolute gift.

For their wonderful support for this 15th anniversary update, I sincerely thank the folks at Attainment Company. From the moment that we started talking about updating the Stages framework and related tools, our visions aligned. Mere words cannot express my gratitude for the Attainment Company spirit and compassion that motivates the evolution of this project.

Your hard work is a celebration for us all!

Madalaine Pugliese

Introduction

About Stages: A Complete Solution

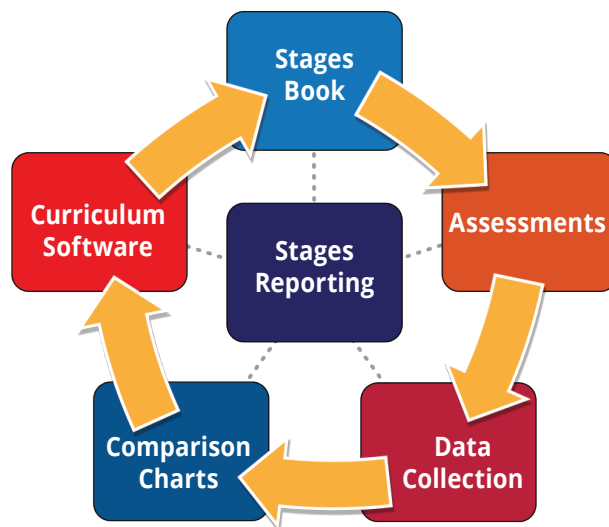
The Stages framework organizes a powerful alternative assessment and learning materials selection methodology for learners with cognitive and language challenges. This framework is based on seven developmental phases that all learners should have an opportunity to experience.

Within the seven stages, the Stages philosophy and framework has two main purposes:

- To be a guide to selecting learning materials for learners with special needs
- To be an informal assessment tool for learners whose competencies are often difficult to measure any other way

As an assessment tool, Stages can help you evaluate a learner's best environment for success as well as plan for future learning and recreational activities.

How does Stages do this? The diagram below illustrates how the pieces of the total solution work together.



Reading the Stages book is the first step in understanding your learners' abilities and identifying appropriate learning materials to build their skills.

To identify a learner's Stage and collect performance data, use the enclosed Stages Observable Skills Checklist to document his

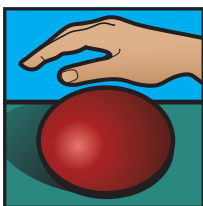
or her specific skill acquisition. In addition, any collected evidence as described on the checklist, combined with the checklist observations can identify the skill areas that have been mastered or those that may need attention. Follow the instructions on the Observable Skills Checklist to collect reliable evidence and valid data.

By consulting the Learning Materials Recommendations Charts included in this book, you can select materials from many publishers that provide the specific content to match a learner's needs. By using the appropriate learning materials, the learner works on target skills, which can then be reevaluated by returning to the Observable Skills Checklist. Then refer back to the book for off-computer extension activities that match the learner's needs.

As the learner progresses within the Stages framework, the Observable Checklist data, collected evidence, and information from practice software can all be used to develop an appropriate educational plan and work portfolio for the learner.

The Seven Stages

The seven stages are developmental and systematic in nature. They are more competency-based, not age or grade referenced. The appropriate stage for a learner is one where he or she is challenged, but not overwhelmed or frustrated.



Stage One — Cause and Effect

At Stage One, the learner is just starting to consistently focus on the screen. She begins to understand that activating her input device—switch, mouse, touchscreen, etc.—makes something happen, and that she can control the learning environment.



Stage Two — Language Readiness

At Stage Two, the learner is exposed to language. He learns that objects have names and actions have words to express them. The learner is not asked to identify objects, but rather absorb vocabulary and concepts.



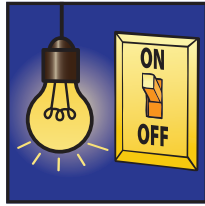
Stage Three — Emerging Language

At Stage Three, the learner begins to show us what she has learned in Stage Two. She can identify objects and place them in categories. This is the first stage in which the learner is asked to make a selection based on a prompt.



Stage Four — Early Concepts

Stage Four is a major turning point in the learner's academic and social development. The learner works on traditional readiness skills such as letter identification, counting skills, pattern recognition, and cooperative play.



Stage Five — Advanced Concepts and Communication

At Stage Five, the learner embarks on a lifelong academic journey. Prepared by the academic readiness foundation built in Stage Four, she can now continue her education in all appropriate and interesting subject areas.



Stage Six — Functional Learning

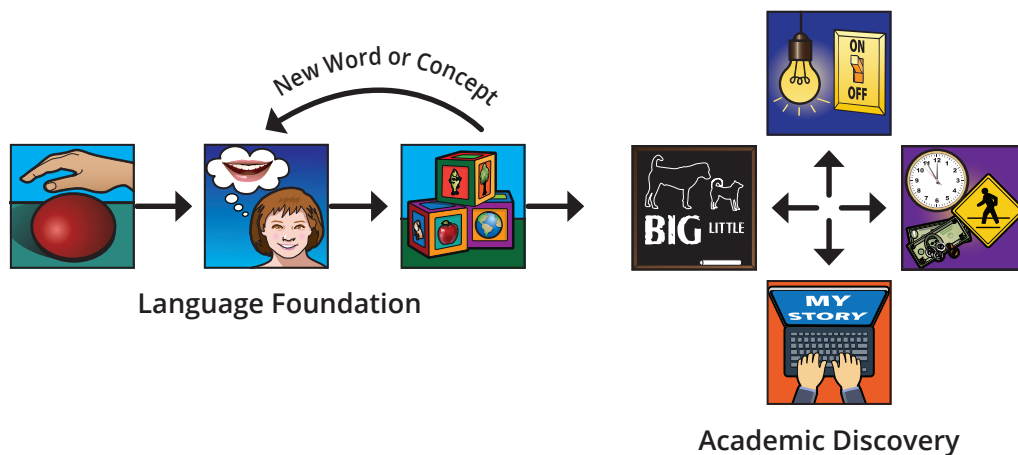
The Stage Six learner begins acquiring the skills that will allow him to become more independent in the real world. For example, he learns how to dress appropriately, use money, tell time, and recognize community signs.



Stage Seven — Written Expression

The Stage Seven learner is ready to express herself in writing. She can read, identify letters, and put her thoughts into written words. She may ultimately use her writing skills in higher education or at work.

Stages One through Three are sequential and focus on language foundation. Stages Four through Seven are not designed to be used sequentially because they work together to assess a learner's competencies within an interconnected academic discovery skill set.



Using This Book

This book presents an overview of the Stages framework by introducing and explaining each of the seven stages of a learner's cognitive and language development. Use it as a stepping-stone toward assessing your learner's needs and then selecting learning materials to build his or her skills.

The detailed information provided in this book helps you identify the appropriate Stage for your learner. Observe a specific competency or behavior, and then use the Observable Characteristics as described in each of the following sections as a checklist to informally determine learner status. The Competency Goals identified at each Stage can serve as an informal benchmark of a learner's progress within a set of skills.

The segments describing each of the Stages contain these sections:

About This Stage



This section introduces the Stage, providing an overview of the Stage and its primary learning goals.

About the Learner



This section provides detailed information about the learner.

Observable Characteristics

These are characteristics of a learner entering this Stage and actively working on the set of skills identified for this Stage.

The Emotional Side of Learning

Learning frequently happens during times of disequilibrium within the learner. Guiding a learner through drawing her own conclusions, discovering her own understanding of fundamental concepts, or applying skills in real-world settings is critically important. This section is included to provide insight into the guidance that might be needed.

Competency Goals

These are the general goals for each Stage. There may be several goals for a learner at each Stage. Having goals helps identify general areas within which the learner will work.

Sample Individualized Educational Plan (IEP) Objectives

These are examples of specific, measurable goals for an individual working at this Stage. Learners in public schools who receive special services are required by federal law to have written IEP objectives. The sample IEP objectives listed for each Stage are supplied as models. You will need to develop your own appropriate IEP objectives for the learner.

Instead of some school districts recommending specific materials for a student to use, describe the characteristics, intent, function, or features that the materials must contain. The materials selected must have features that will help the learner address specific objectives described in his or her IEP.

Case Study

This section illustrates each Stage with a case study of a learner who is actively working on appropriate skills facilitated by iPad integration with a strategically selected app.

Relevant Issues



This section focuses on information and issues that are specific to the Stage: device access, types of activities, adult roles, etc.

Communication Strategies



The purpose of including a communication section for each Stage is to provide strategies for aligning communication tools and procedures with learning methodologies.

About the Software



This section describes the important features of digital learning materials (apps and software) that are appropriate to consider for a learner at this Stage.

Extension Activities



This section suggests ways to extend and solidify learning through play, songs, and other off-technology activities.

Moving to the next Stage



How do you know when to introduce new concepts or practice a new skill set? This section helps you interpret the progress that your learner is making.

Learning Materials to Consider



These are the software, apps, and other curriculum materials that are recommended for each Stage. They are created by various publishers, clinicians, and educators who specialize in assistive technology. You can use many materials across several Stages by adjusting the settings or preferences.

We must take care when selecting materials for learners with special needs, as some commercially available products may not be appropriate. This book will help you identify important features of materials at all levels along with specific recommendations.

Appendices

At the end of the book you will find the following information:

- List of Internet resources for additional activities and information
- Resource Directory of publishers of assistive technology products
- Observable Skills Checklists
- Vintage Software Directory with publishers of recommended software

About Our Target Learners

Many learners will work at more than one Stage at a time depending on their unique abilities. For example, when a learner begins to explore the alphabet at Stage Four, that learner might also practice copying the letters with pencil and paper or explore letters using a word processor. This could also be considered a beginning Stage Seven activity.

Individuals with learning difficulties often demonstrate varying skill levels depending upon the content being addressed. Some may experience a delay in language expression, yet be able to work at a more age-appropriate level in math or problem-solving activities. Other learners may not speak at all, yet compose a written language assignment with ease. Still others may be able to verbally describe a detailed story, yet have difficulty writing that story down on paper.

Stages is designed to consider that learners will often work across target skill areas at varying levels, make inconsistent progress, and may not master skills in every area. While not every learner will master the comprehensive set of skills suggested, we can apply Stages as a tool for considering and measuring observable, recognizable, competency-based performance.

About the Case Studies

It makes sense to illustrate each Stage with a case study of a learner who is actively working on appropriate skills facilitated by iPad integration with a strategically selected app. To do this we proudly collaborated with the Anne Carlsen Center in Jamestown, ND. We selected this school because of their unparalleled approach to technology integration in the education of learners with intensive special needs who typically work within the Stages framework. Regardless of ongoing consideration for fragile medical essentials, when they are at school, these students are learners first! The school team collaborates to embed assistive technology throughout daily life, both in school and in the residential settings. Meaningful and thoughtful strategic interventions greatly facilitate learning and living at the Anne Carlsen Center. For more about the Anne Carlsen Center, see page 209.

Communication in General

Selecting the most efficient way to communicate can be a challenge. It is important to involve a group of professionals to identify the features on the communication system to meet your learner's needs.

An evaluation should involve a team of professionals. Team members examine the learner's needs, current method of communication, and potential uses for different devices or apps. Over time, team members and procedures may adjust as the learner's needs change.

It is important to have professional follow-up after a decision has been made to adopt a solution. This may simply be a one-time training or may require ongoing speech-language services that focus on the development of communication using the solution over a period of time. Professionals need to help the learner and communication partners understand a variety of skills and

strategies. Take advantage of the wonderful support offered by the manufacturers of these powerful devices and tools.

The Stages framework looks at communication from an educator's perspective. Educators want to know that the vocabulary needed in the classroom is controlled by the learner. Therefore, it is important for readers to understand that the Stages framework advocates for formal AAC evaluation. In this book, no AAC software, apps, nor hardware is recommended out of the context of this respected process.

General Considerations for Digital Learning Materials

It is important to note that most digital learning materials, specifically software and apps, can be recommended at more than one Stage. Thanks to the efforts of the developers of these programs, varied content and flexible preference settings can allow for custom learning experiences. Look for settings that allow you to use software at more than one Stage.

By making adjustments to areas such as input option, specific content for a picture identification activity, or custom word list in a reading activity, you can use the same software program or app successfully at several Stages. For example, you may turn off animation for learners who have a startle reaction to that event on the screen. Perhaps you might adjust a program from presenting pictures one at a time (Stage Two) into an activity where the learner selects the content (Stage Three). Or you may use a Stage Five reading activity for a Stage Seven writer, as several programs address language-building skills essential to both Stages. Use every possible setting to best support and facilitate the learning process and customize the content of the activity.

Keep in mind that sometimes software from a lower Stage can be used recreationally for a learner who is functioning or developing skills at a higher Stage. The design of the software or app and its content, graphics, and sound would be familiar or easy to grasp. This comfortable environment could serve as fun and relaxing play or provide a practice arena.

Several publishers build record keeping into their programs. This can be advantageous when tracking day-to-day learner progress or small incremental changes. However, not all companies provide this feature. Sometimes the data provided is interesting

but does not target the same behaviors or skills that the learner needs to practice. In this instance, the rudimentary data collected is not particularly useful even though it is provided.

Some companies develop elaborate and extremely useful management systems. One of the rare examples of this is the Sterling Edition software by Laureate Learning Systems. This software version collects extensive timing data (e.g., response time) as well as response pattern data (e.g., side of screen bias). Educators and therapists can use this detailed information to monitor learner progress when using these programs.

Whenever possible, preview the software or app before you purchase it to make sure that it suits your learner's needs. Many publishers offer "satisfaction guaranteed" purchase options, or provide free light versions of their apps or partial access to a website to evaluate for appropriate features.

Other Digital Materials Selection Criteria

While matching user skill and content development is the focus of this undertaking, several other software selection criteria are important to consider. These include:

- Learner/adult control over the interaction process
- Adult control over the content
- Nurturing and supportive learner feedback
- Appropriate built-in access features

Note that other important materials selection criteria are included in the section for that Stage.

Learner/Adult Control over the Interaction Process

The learner should be able to control key features of the software or app for personal comfort and performance success. For example, the timing of the interactions should be self-paced. Sometimes learners with special needs require additional time for responses. This might be because the learner needs to reposition for comfort or requires more time to understand the interaction process. When developmentally appropriate, key features best suited to learner control include selection of activity, number of times for replay and, as mentioned, timing of interactions.

Adult Control over the Content

Oftentimes, learners with special needs have custom or target curriculum areas to be addressed. For example, spelling words might consist of safety words rather than a publisher's predetermined list. In this case, the design and presentation of screens match the learner's needs, but the content needs customizing. Reasons for customizing content center around each learner's unique curriculum. The ability to make such adjustments is a most desirable software or app feature.

Nurturing and Supportive Learner Feedback

Learners need to be guided toward appropriate and accurate responses. Finding positive software or apps designed to guide the learner toward success is key. For instance, if an object or item is to be located among a set of distracters, steady elimination of the incorrect choices helps lead the learner toward the target. Enthusiasm for the software is likely to wane if feedback is negative in any way. Digital learning environments can be designed to make learning fun, and eventually lead to success.

Appropriate Built-in Access Features

Using adaptive devices or alternative input hardware can be an involved process. Be sure that the learner has a current assistive technology evaluation to ensure that he or she is using the most effective access method(s). Some software or apps are designed to permit easy setup for alternative devices. Specialty menu options can make using such built-in settings relatively simple.

We celebrate the publishers who consider learning differences by designing software for success by any learner.

Getting the Apps That Accompany This Book

Attainment Company has bundled multiple iPad apps that exemplify the skills and goals targeted at each stage. Visit Attainment's website for further details.

Develop the Language Foundation: Behavior and Language for Learning



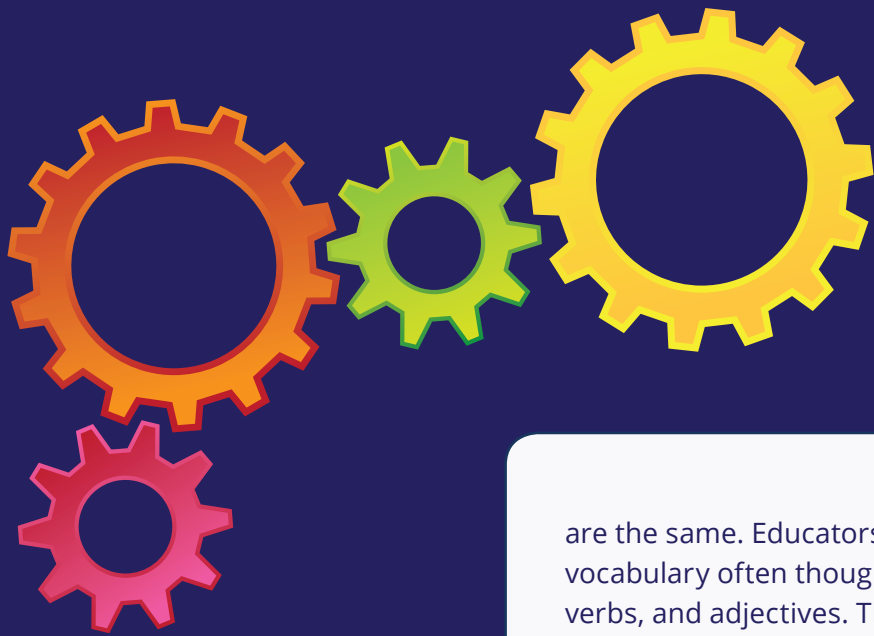
The first three Stages focus on establishing the behavior for learning and then building the language foundation needed to be a successful academic learner.

The behavior for learning has two components:

- 1) Understanding effective interactions with the access device
- 2) Paying attention to prompts while establishing understanding of interaction timing. We have traditionally been calling this behavior cause and effect. However, the Stages framework somewhat redefines this term. From the Stages perspective, we coach a reliable physical movement without extra clicks and with attention to the outcome. We use limited language, only focusing on establishing the reliable movement and waiting for the outcome to occur. Once that is clearly established, we have completed Stage One.

The language foundation is built during Stages Two and Three. We move back and forth between these two Stages as new words and concepts are introduced receptively (Stage Two), and then used in expressive activities (Stage Three). We look for vocabulary acquisition and focus on several types of language building. We go back to Stage Two each time we teach a new word or concept, and then to Stage Three to use this new word or concept.

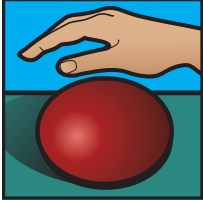
Speech-language pathologists and educators might see these two Stages a bit differently, but our goals



are the same. Educators first focus on content-rich vocabulary often thought of as content words: nouns, verbs, and adjectives. These words are often identified by curriculum demands. We also incorporate non-content words, which is a more difficult task because these words have no meaning without context. These words include pronouns, verb tenses, prepositions, and wh-question words. We must teach these words and concepts because they have direct impact on meaning and comprehension, greatly impacting the language foundation for learning that we are building now. In short, we are establishing a linguistic structure for the vocabulary for learning that will have profound impact on comprehension and meaning for both spoken and written language.

It is important to keep in mind that learners with language challenges require patient and repetitive practice with modeling. Learners with autism, Down syndrome, or any other language challenges need ongoing modeling and opportunities to practice language and syntax to become effective readers. Learners who struggle with simple sentence structure will clearly struggle with comprehension of more rich or descriptive language later.

The following three sections describe Stages One through Three in detail.



Stage One

Cause and Effect

About This Stage



In Stage One, the learner begins to associate an intentional movement with the ability to cause something to happen. She makes the connection between motor behavior and effect in the environment. The learner begins to use an appropriate input method to control the computer or mobile device and establishes a reliable access behavior. She realizes that pressing a switch or a touchscreen can make something happen on the screen or result in playing a sound, and that she is controlling the experience. Reliable access behavior often changes from an experimental phase to a more purposeful and consistent movement, which includes waiting to observe the results of this movement. This major achievement is the first step in the learning process.

About the Learner



When a computer, mobile device or adaptive input device is introduced, you can expect to see experimentation. Imagine how a very young child would learn to draw with crayons. First she experiments with scribbling to get the feel of the crayons. Then she can begin to use them more deliberately. In the same way, a Stage One learner may experiment with the input options for a device. For example, she might reach for the device, touching it with multiple fingers. A touchscreen user may point randomly all over the device surface but at no specific target. A mouse user may click rapidly regardless of the pointer location or the timing of the software content. Or she might experiment with a switch, pressing it repeatedly with seemingly little regard to the effect it may be causing. It is important to vary the placement of the access device, allowing opportunities for accidental activation. Should this occur, immediately praise the activation to reinforce even incidental occurrences of the desired behavior.

Observable Characteristics

Watch for indications that the learner can:

- ✓ Turn attention toward a stimulus

- ✓ Look in a purposeful manner
- ✓ Listen or attend for extended periods
- ✓ Begin to or consistently focus on a target
- ✓ Begin to or consistently respond to a prompt
- ✓ Explore the access device with purposeful interaction
- ✓ Move from multiple, random access attempts toward appropriate device mastery
- ✓ Perform simple cause and effect experiment
- ✓ Activate device upon request
- ✓ Respond to one-step direction upon request
- ✓ Recognize that change or environment can be controlled
- ✓ Associate certain activities with environmental cues
- ✓ Consistently use the control site muscle or access method (touch, eye blink, sip/puff switch, so forth) in response to prompts for behavior
- ✓ Wait to participate

Emotional Side of Learning

Stage One begins a lifelong journey. Stage One learners have experienced little opportunity to work independently. They want to learn, but learners with developmental delays may have difficulty initiating explorations on their own or understanding how to sustain an interaction. For learner success at Stage One, be sure to encourage every attempt at deliberate interaction. Even if achievement takes much longer than you had hoped, the small steps taken build self-confidence and will eventually allow access to important content. Stage One builds a solid foundation for understanding how to explore and subsequently to learn.

Developing focus and attention behavior is an essential Stage One skill. Attention is about where the brain is focused during a learning activity. For emerging learners who experience cognitive delay, the brain only attends to small stimuli at one time. To connect body movement with attention, start by creating environments where accidental activation of a device can occur. Choose a movement the learner already does so that you can facilitate accidental activation. For example, if a learner rocks back and forth, place a switch near the front of the shoulder so that incidental activation will occur when the learner rocks forward. When the learner rocks back, or away from the switch, the effect

should stop immediately. The learner begins to understand that learning is not about the action or effect that occurs, it is more about attention to the actual activation, understanding that the learner behavior caused an outcome to occur.

Competency Goals

In this Stage, the learner realizes that she controls the computer or mobile device, and she may work toward mastery of an appropriate adaptive input device. The learner is in control, producing desirable results and developing a new relationship with attention to her environment. This becomes the foundation for access to more sophisticated content and to the world, using these devices as tools for learning at later Stages.

Sample IEP Objectives

Written objectives for the learner at Stage One primarily target behavior. We are looking for at least one reliable means of access and evidence of attention. Because the learner might demonstrate inconsistent performance, we are using motivating targets that encourage interaction with the digital learning environment. While the learner experiments with access because she is stimulated to interact with the software, observers should watch for intentionality through body language, position changes, utterances, or any other indicator particular to the learner.

Through careful observation at Stage One, we want to understand several things about the learner. We need to determine

- At least one recommendation (hopefully more) for control site muscle or reliable movement
- The type of prompt and feedback preferred (visual, auditory, and/or multisensory)
- The content that appears to be of interest, and
- The input device, method, and position that appear to be most reliable and/or successful

Here are sample IEP objectives to accompany the observations above.

Given *name of accessible program*, the learner will:

- Consistently activate the switch or press to activate using the same body part in eight out of ten trials
- Respond in eight out of ten trials to either an auditory, visual, or multisensory prompt to activate the program

- Indicate interest by head tilt, utterance, eye gaze, or facial expression
- Activate the device with fewer than five prompts in less than one minute
- Demonstrate competency using an appropriate access method (press and release or press and hold) in eight out of ten trials
- Demonstrate deliberate or intentional use of the input device
- Wait to observe results of activation rather than continue to press
- Initiate exploration of the content

These objectives are measured by the management system provided by the program or by adult reliable observation

Case Study



Gage is a three year-old boy in pre-kindergarten who is working on pointing and finger isolation. Eventually we will work toward basic access methods to the iPad, including swipe, tap, double tap, pinch, home button, and switching apps. But he first needs to understand how his finger works on the screen. He is also using the iPad for appropriate leisure activities at school and at home. Whenever he is engaged and actively participating in activities there is a decrease in acting out behaviors.

CHARGE syndrome is a disorder that affects many areas of the body. Gage has right-sided facial palsy, webbed neck, retrognathia, reflux, G-J tube for drainage, laryngomalacia, tracheostomy, severe sensory hearing loss, Cochlear Implant, and hypotonia. He can also become tactically defensive.

In this photo Gage is exploring the screen and the activities in the app. He is very focused and not distracted with other classroom activity. The coach is a paraprofessional working and modeling appropriate behaviors and interactions.

Gage is very motivated to come to school. He likes school and is enthused about learning. Although he tends to want to work/play by himself and has limited interaction with other students, we hope that the iPad will eventually become a tool to facilitate interaction and engagement with peers.

Relevant Issues



For some individuals, finding the appropriate device, correct positioning, case and/or mounting, and best means of access can be a challenge. Try to find a position or mount for a reliable movement where the learner will be able to activate the switch without help. Devices might be activated by direct select such as touch, or indirectly using a reliable movement to access a switch (grasp, eye gaze/blink, head tilt, sip/puff etc). The eventual successful use of full keyboard or emulators and mouse alternatives requires finding the user's most appropriate control site. Positioning the learner for comfort can also lead to eventual full access of an alternative input device. For optimal performance, it is important to involve an occupational therapist (OT) and/or a physical therapist (PT) when setting up adaptive environments.

Initiation of intent must come from within the learner. Your job is to create opportunity for trial and error. Learners require practice and repetition while learning reliable movements. Thousands of patient repetitions with variation are needed, not to frustrate but to provide opportunity to explore.

Adaptive Hardware

If an alternative input device is required for physical access, then a formal assistive technology evaluation is mandated by law, as mentioned in the section called Stages Connections. Once the assessment is completed, interventions that consider learning, time, and cost efficiency can be efficiently designed. For example, if the assessment recommends that the learner use a switch and software that offers switch access options, adding a switch interface can be simple and inexpensive.

Device Use

A switch, mouse, or touchscreen may be used in different ways, depending on the software or app. For beginning switch users who can "press and hold" a switch, look for software that allows for continuous activation feedback. In this type of use, the action or sound generated by the software or app continues uninterrupted while the device is activated. It begins when the device is first activated and ends as soon as the access is released. It may take practice for the learner to press the switch for longer than just a tap. However, this type of use clearly shows the learner

that activating the device is making the action or sound occur, and that she is in control. The longer she can activate the device, the longer the music will play or the animation will continue. This is cognitively and physically the most fundamental place to start. However, your goal is a deliberate press and release, with waiting for attention to the effect.

Press and release is the preferred type of switch interaction. When the learner taps the switch or touches the screen, pressing and immediately releasing it, the action or sound begins. This activity feedback continues for a fixed amount of time with no further press needed from the learner. This type of touch or switch use is the ultimate goal for the learner but is conceptually more difficult for beginning switch users. At first the learner may not recognize that the switch press caused the action on the screen. Look for software that allows you to adjust the length of time that the action continues after the learner activates the adaptive access device. We want practice activities that present short and momentary action and then stop so the user must activate again to see or hear more. This feature develops her attention to the action that results from the switch press.

Research indicates that infants under four months of age equivalency can learn to associate their movements with an environmental consequence. Babies do not learn if there is a delay of more than two seconds between movement and consequence. Infants as young as three months old can remember consequences or associations for at least one week and can reactivate learning for up to three weeks. Learning brains need variety. Even infants can use a switch through exploration. However, it is also observed that they stop using the switch when they get used to the outcome. Varying the consequence results in renewed interest in the switch use.

If the learner is using a switch, Stage One is the time to find out how the switch is most effectively used. Does the learner press and then release the button? Or does the learner press and then hold down to activate? What physical considerations need to be made regarding the positioning of the equipment and user?

Stage One is not only about finding one perfect switch placement. It is about finding the best combination of switch placements to learn to use. We don't start with automaticity—that is the end

process. We get there through experimentation and practice at various sites. During Stage One we want the learner to advance from experimenting with learning behavior and attention to reliable and purposeful movement. During Stage One we establish automaticity. Movements done automatically do not create new brain connections. When automaticity is established, you don't deliberately think about the learned skill, such as tying your shoe or brushing your hair.

Communication Strategies



The ability to produce a purposeful movement is required when learning to use an Augmentative and Alternative Communication (AAC) device. The eventual effective use of a voice output device depends on the reliable movement and attention to task that the user develops during Stage One. However, it is appropriate to use a single message device recorded with silly sounds, humorous noises, or music to encourage incidental activation.

If an activity is designed to align with curriculum standards, it is appropriate to label the single message device with a graphic and simple vocabulary to match. Should an incidental activation occur, reinforce the behavior, not the related language.

About the Software



Finding software or apps with built-in adaptive access features is important. However, at Stage One, because we are not looking for activation of specific targets, any app that results in an action upon touch could be useful. Options to consider include type of prompts or scheduling cues. Because we do not look for the skill of selecting specific targets at Stage One, if an app or software offers options or settings for scanning, we will only use single touch or press activities.

In Stage One, the learner recognizes that she has control over the computer through her input device. The purpose of the software at this Stage is not to present information but to motivate the learner to discover how to control the computer. Therefore, appropriate software generally offers very light content or meaning.

For example, when the user initiates an interaction, colors might change on the screen or a sound might play. For some learners,

that amount of feedback is enough to call their attention to the computer or motivate them to work toward device mastery. For others, the content itself might motivate interaction. Working toward an age-respectful animation, humorous image, or inviting sound can be just what some learners need to motivate more deliberate interaction with the software.

Parents and support teams should note if a software characteristic interests the learner. Does music elicit a more reliable response from the learner than an animation? Indication of a preference for either visual or auditory activities might provide information on what the ideal learning environment for the learner will be in later Stages.

Selecting age-respectful software is important when considering motivation. Not all Stage One learners will be young children. More mature learners may need to begin at Stage One to develop input device mastery through cause and effect. Or if a learner's device is changed and she must learn this new access method, Stage One software provides a risk-free practice opportunity.

Software depicting a child laughing is designed for younger users, while software depicting a young adult playing basketball offers more respectful content for adolescent or more mature learners. Both programs offer equivalent Stage One learning opportunities but select different graphics to appeal to different learners.

Types of Learner Prompts

Most believe that reliable movement cannot be taught through prompting. It is learned through repetitive trials and experiences. That being said, when considering the context of learning interactions, becoming aware of prompts is a skill that emerges during Stage One.

When you select software at this Stage, it is critical to consider the prompting for the learner interactions. Some programs offer only auditory prompting, motivating the learner to interact with the software by responding to encouraging sounds and spoken language. For example a voice might say, "Please press the switch," or "Touch now."

Other programs offer only visual prompting, motivating the learner to interact with the software by responding to pictures

or animations that encourage the appropriate behavior. For example, an animated hand might press a picture of a switch on the screen, or a picture of a finger touching the screen might appear to prompt behavior.

Some programs offer multisensory prompts that are auditory and visual in nature. In selecting the appropriate software, consider the learner's strengths as well as areas in which the learner needs practice.

Adult Guidance

The adult's role in the learning process is key. Your role is to focus the learner's attention on the activity through verbal encouragement and physical prompts, such as pointing to the screen. Be patient and let incidental learning occur. Anxiety and fear turn off the ability to learn. Allow the learner time to get comfortable with the device before attempting to have her use it purposefully.

Your contributions will complement the prompts provided by the software. Help the learner pay attention to the activity and reinforce her increasing understanding that she is making something happen. For example, say "Look, you did it!" while directing the learner's attention to the action on the screen. Take care to only encourage reliable access behavior at Stage One and not focus on language learning just yet.

The ability to wait is an important component of effective interactions for learning. Waiting for your turn in a learning activity or in a communication exchange is an important element of the interaction. Teaching the ability to wait is strategic. Publisher and practitioner RJ Cooper builds software and apps specifically for learning these skills.

In a 2015 interview he suggests these strategies:

"First Phase: Use the apps/programs Switch Progressions (Children's or Teenage) with *Penalty* turned off so that there is no wrong time to press the switch or touch the screen. Let learners interact freely. Second Phase: For someone who continues to touch or press while the music is playing, turn *Penalty* on. When the learner then presses her switch during the reinforcement, the screen will blank,

our animated sign language avatar signs 'wait' and a voice speaks either "not now" or "wait." Third phase: If the learner still perseverates on touching or pressing, then during the music reinforcement, I do something with the learner that is mutually exclusive behavior to not waiting. Most of the time, I 'chair-dance' with the learner while the music is playing. With my palms up and extending my hands toward the learner as soon as the music starts, the learner will take my hands, or at least try. I always make them successful, but always from underneath. If you extend your hands towards someone with palms up, they instinctively take your hands; they reach out, usually palms down. They might withdraw after a bit, but if you leave your hands there 'dancing' they almost always come back to them. If they withdraw, never take it personally. Assume they will return at their own pace. But once they curl their fingers downward, I curl mine upward to lock fingertips, and I 'dance' their hands in ways advised by OT/PT. As soon as the music stops, I let go and move away a bit. When they touch the screen or press their switch, we begin again."

Should the skill of learning to wait still not evolve, RJ further suggests,

"Alternate third phase: At times, I remove the switch from the learner's reach, or I move the learner away from the switch (wheelchair or rolling chair) and then I do my 'chair-dancing'. Once the music is over, I roll them back up or put the switch back into position."

Monitoring Learner Performance

Evaluating progress can be a subjective and difficult process. Some individuals demonstrate small incremental changes over long periods of time, thus making it difficult to document progress. Did the learner deliberately touch the screen or activate the switch? Did she interact with the software for a longer period this time than last? How do you recognize progress? Some software programs keep track of learner performance or interactions. Finding software with built-in recordkeeping can be most helpful. Information such as the learner's time on task or use of the input device can be monitored and saved as a progress report to be placed in a portfolio.

When evaluating data collected, don't focus on inconsistency of learner performance as Stage One skills emerge. Instead, look for improving engagement. Is the learner working longer or activating the access device more frequently? While we hope for such data to be collected by using software, what about measuring progress when engaged in activities away from technology? Anecdotal notes and observations can be invaluable.

Software Selection Tips

At Stage One, look for software that offers:

- Prompts to motivate the learner
- Stimulating colors, sounds, or animations
- Control over volume and animation speed
- Little or no content to learn or understand
- Customizing options for prompts, graphics, and effects
- Age-respectful options for graphics and animation
- Built-in access features for input method
- Recordkeeping capability

Extension Activities Away from Technology



Relevant and successful assistive technology interventions do not have to involve the use of a computer or mobile device. In fact, to ensure that a movement is purposeful and reliable, it should be used away from the digital learning environment.

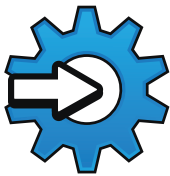
Off-Device Ways to Address Stage One Skills

For younger learners try using motivating adapted toys or appropriate electronic appliances to inspire the learner to master an access device. Switch-adapted toys for younger learners offer activities such as making a car move or an animal jump. Consider ways to bring sensory preferences into the activities by selecting toys that make sounds, light up, or move. Try a vibrating pillow or battery-operated body massager adapted for switch use. For more mature learners, activating an electronic device such as a digital music player offers an age-appropriate activity.

Regardless of the practice environment, the purpose remains the same. By taking small steps, learners are moving toward a

reliable behavior that results in access to the world. Each attempt is another of these steps. Offering opportunities to practice the same skill creates a supportive learning environment. Therefore, providing both light and high tech options is highly recommended. In fact, seeing a learner progress toward deliberately operating the same switch both on and off a computer or mobile device lets you know that she is developing a generalized understanding of device mastery. Offer content and language-light experiences when creating extension activities. We are working toward reliable behavior for device mastery at Stage One, and the focus is on gaining independent control, not yet on language development.

Moving to the next Stage



Multiple factors must be considered before moving on to Stage Two. Be sure your learner does not lose interest in repetitive tasks by varying the effect. This can be misinterpreted as not understanding the repetitive movement. You know when it is time to move to Stage Two when the data for prompts indicates that the learner waits to hear or see the prompt once and then responds by clicking only once, with one prompt and/or no prompts needed.

Automaticity of motor behavior occurs when the learner is able to use a reliable movement to achieve a desired outcome without deliberate thought toward the performance of the task. The intent may originate consciously or unconsciously but is concentrated on the reason for the movement, not performing the actual movement.

It is important to understand the difference between using cause effect movement for learning (cognitive motor development) rather than for recreation and leisure (relaxing). Move quickly to Stage Two (language readiness) once Stage One learning and attention skills are established.

Learning Materials to Consider



Manipulative Materials and Guides

TITLE	PUBLISHER
Adapted toys, mounts, and switches	AbleNet, Inc
Adapted materials for all ages	Enabling Devices
Adapted play materials	Beyond Play
Adapt This ... A picture-book guide for adapting almost anything	Adaptation Inc.
Bluetooth switches	Attainment Company
Every Move Counts, Clicks and Chats	EMC, Inc.
Stepping Stones to Switch Access Note: Use Steps 1 and 2 only	Linda Burkhart
Special Needs Resource Center	Fat Brain Toys LLC
Toy Guide for Differently-Abled Kids	Toys R Us

Software

Apps and software are constantly changing, so listing reliable choices is difficult. However, here are some favorites.

TITLE	PUBLISHER
Chooselt! Maker online	Inclusive Technology Ltd
Ginger Tiger online	Ginger Tiger
HelpKidzLearn online	Inclusive Technology Ltd

Apps

If the app is still available, the link under the title will lead you to the app in the iTunes store.

TITLE	PUBLISHER
Baby Butterfly - my first colors	Kids Place
Baby Laugh Soundboard	ARE apps limited
Baby Rattle Toy	SelenaSoft, Inc
Balloonimals	IDEO
Bebot	Normalware
Big Bang Patterns	Inclusive Technology Ltd
Bongos - Dynamic Bongo Drums	Skunk Brothers GmbH

Bubbles	Hog Bay Software
Bubl Tap	BUBL GmbH
Buzz Back—Cause and effect with vibrations and sound	TouchAutism
Cause and Effect Sensory Light Box	Cognable
Children's Switch and Touch Progressions	RJ Cooper
Eye Contact Toy Box	Fizzbrain, LLC
Finger Paint with Sounds	Inclusive Technology Ltd
Firetrucks	Apps for Hunger, Inc.
Furry Friend	Plutinosoft
Hand Drums	Cody Rotwein
Heat Sense v 1.8	Graham Dennis
Hippi 1	Leripa AB
Peeping Musicians	Inclusive Technology
RadSounds	R J Cooper
Sensory-CineFX	Sensory App House Ltd
Sensory-Electra	Sensory App House Ltd
Sensory-FotoFrenz	Sensory App House Ltd
Sensory-iMeba	Sensory App House Ltd
Sensory-Just Touch	Sensory App House Ltd
Sensory-Magma	Sensory App House Ltd
Sensory-Room	Sensory App House Ltd
Sensory-Speak Up	Sensory App House Ltd
Sensory-Splodge 1	Sensory App House Ltd
Sights and Sounds: Flowers	Marblesoft
Smart Tot Rattle - Cause and effect sensory stimulation	Moxi Mobile
Smarty Pants	Inclusive Technology Ltd
Sound Touch Lite Baby-Flashcards	SoundTouch
Switch Kids	Marblesoft
Talking Teddy Bear	Talking Toys SL
Teenage Touch and Switch Progressions	RJ Cooper



References for Stage One

Bean, Ian. 2011. Switch Progression Road Map. United Kingdom, Inclusive Technology. Retrieved. <http://www.inclusive.co.uk/articles/switch-progression-road-map>

Bennett, Randy. 1998. *Reinventing Assessment: Speculations on the Future of Large-Scale Educational Testing*. Policy Information Center of Educational Testing Service.

Berdine, William H., and Stacie A. Meyer. 1987. *Assessment in Special Education*. Boston, MA: Little, Brown and Company.

Bowser, Gay, Jane Korsten, and Penny Reed. How Do You Know It? How Can You Show It? Making Assistive Technology Decisions. Wisconsin Assistive Technology Initiative, 2002.

Burkhart, Linda. 2012. Stepping Stones to Switch Access. <http://www.Lburkhart.com>

Burkhart, Linda. 2015. *Motor Cognitive Learning: Not Just "Hit the Switch"*. Assistive Technology Industries Association annual conference. Orlando, FL.

Bybee, Rodger, and Robert Sund. 1982. *Piaget for Educators*. Columbus, OH: Charles E. Merrill Publishing Co.

Chomsky, Noam. 1986. *Knowledge of Language: Its Nature, Origin, and Use*. Westport, CT: Praeger Publishers.

Chomsky, Noam. 1990. "Mind and Cognition: A Reader." *On the Nature, Use and Acquisition of Language*. 627-646. Ed. William G. Lycan. Oxford, England: Blackwell Publishers Ltd.

Cooper, RJ. 2015. Interview: *Advice on Teaching "Wait" as a Cause and Effect Skill*. Simmons College. Boston, MA.

Foss, Terry, and Jane Korsten. *Prompting: A Cautionary Tale*. Closing the Gap: October/November 2011.

In CASE, The Newsletter for the Council of Administrators of Special Education, a Division of the Council for Exceptional Children, 1920 Association Drive, Reston, VA 20191

Journal of Special Education Leadership (issue referenced: Volume 12, Number 2, Fall 1999)
Council of Administrators of Special Education, CASE, Inc., 101 Katelyn Circle, Suite E, Warner Robins, GA 31088

Korsten, Jane E., Terry V. Foss, and Lisa M. Berry. *Every Move Counts Clicks and Chats: Sensory-based Approach: Communication and Assistive Technology*. Kansas City: EMC, Inc., 2007.

Korsten, Jane. Assessment Strategies: Getting the Information You Need for Individuals with Significant Sensory Motor Differences ([John Hopkins Webinar](#)). Maryland Assistive Technology Network Webinar series: 2010.

Skinner, B. F. 1969. *Contingencies of Reinforcement: A Theoretical Analysis*. New York, NY: Appleton-Century-Crofts, Inc.

TAM Connector (issue referenced: Volume 12, Number 1, Fall 1999) Council for Exceptional Children, 1920 Association Drive, Reston, VA 20191

The Center for AAC & Autism, <http://www.aacandautism.com>

About the Author

MADALAINE PUGLIESE

President, Assistive Learning Technologies, LLC



Ms. Pugliese has 40 years of experience in K-12 education, including 25 years in higher education, and is a nationally acknowledged consultant in assistive technology integration. Madalaine has received international awards and recognition for her innovations including: Apple Distinguished Educator by Apple Computer, Inc.; “Shaper of the Future” by Converge Magazine; and is a recipient of the Pathfinder Award from the Massachusetts Computer Using Educators (MassCUE).

The Smithsonian Computerworld Honors Program recognized Madalaine’s work with a Laureate Award twice: In 2000 as Director of the Assistive Technology Project for the Massachusetts Department of Education, and in 2001 as the author of the Stages Developmental Framework (book and accessible diagnostic software).

Her achievements include: Former Director of Assistive Technology Graduate Program at Simmons College, Boston, MA; one of the Ten Most-Influential Assistive Technology Specialists in the country by Microsoft/IntelliTools partnership; former developer and Director of the Assistive Technology Project for the Massachusetts Department of Education; former Co-director of Camp Apple and summer program for educators on new instructional technology; and founder of Adaptive Rehabilitation Technology, a nonprofit organization offering information and resources for families with needs for adaptive technologies.