# The Research and Evidenced-Based Foundation of Monarch School

Monarch Center for Autism
*A Division of* Bellefaire JCB

## Introduction

Monarch School's philosophy for teaching children on the autism spectrum is based on research and evidence. Its curriculum relies heavily on the use of visual supports and technology and has been shaped by research literature. The school's objective, which is aligned with the National Academy of Science's guidelines for educating children on the autism spectrum[1], is to build knowledge and life skills by adapting to the individual needs of each of its students.

The core of the Monarch Model is the development of language through both spoken and visual language. Visual supports are used throughout the curriculum, and language concepts are carefully and systematically introduced in tandem with common techniques for helping individuals on the autism spectrum. The Monarch Model has successfully increased its students' use of language, thereby enabling them to communicate more meaningfully in the world, and to form and participate in relationships that enrich their lives.

## Individualized Student Assessments

At Monarch School we believe that assessment drives intervention. We use a variety of standardized and non-standardized methods of evaluation to gain a clear understanding of our students' strengths and weaknesses.

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## Monarch Natural Language Curriculum

Most individuals on the autism spectrum have difficulty acquiring language in the typical fashion. However, observational and visual processing skills are often better preserved, enabling people on the spectrum to utilize these to improve the effectiveness of their communication. Individuals with Autism Spectrum Disorder benefit from explicit language instruction, especially when paired with the systematic and structured use of visual supports.[2, 3] Monarch School's philosophy emphasizes that teaching is always concept rather than skill based to maximize the potential for carrying over what is learned and developed at school. The maladaptive behaviors demonstrated by individuals on the autism spectrum are often the result of an inability to effectively communicate their needs, wishes, feelings and ideas.[4, 5] In other words, behavior has explicit meaning.

At Monarch School we capitalize on strong visual processing skills and residual spoken language ability to create a conceptual framework that supports communication growth and development. Better communication allows the individual with autism to express his/her needs within more conventional and socially acceptable behaviors. Accordingly, we have developed the Monarch Natural Language Curriculum (MNLC). It is a fully integrated, immersion language program, that takes place in a natural environment,[6] and supports behavioral goals and objectives that are addressed in the classroom. The MNLC assists school personnel in maximizing the "teachable" moments that occur during the school day by supplying scripts that are inclusive of all strands of language. This approach provides multiple opportunities to practice language concepts during existing school routines and transitions. The student benefits from a predictable language encounter that enhances his classroom experience. The MNLC also ensures that all staff including occupational therapists, speech-language pathologists, specialists and classroom teachers coordinate efforts to support language goals and objectives.

## Visual Supports

Due to a strong interest in visual materials along with visual processing capabilities, most individuals with autism benefit from the use of visual content to enhance communication, help organize daily experiences and improve school performance.[7, 8, 9] Since its inception, Monarch School has integrated visual supports into every aspect of school life, thereby maximizing receptive and expressive communication, clarifying the organization of a student's day, and improving academic performance. In collaboration with our strategic partner, the Autism Language Program from the Children's Hospital Boston, we established a conceptual framework for the use of visual supports based on clinical outcomes. We created a systematic approach that is organized around three primary constructs: Visual Instruction, Visual Expression, and Visual Organization.[10] Recent literature and research in the field of autism consistently demonstrate evidence to support the effective use of visuals. To optimize this use, we take into consideration students' levels of representational ability as well as the most appropriate types of visual support for different aspects of their curriculum. Because we believe that assessment drives instruction, we want to avoid the arbitrary selection of graphic materials such as 3-D photographs, standard photographs, picture drawing, line drawing representations and text. As a result, spoken language in our classrooms is improved by using easily recognizable visual elements that compliment directives, questions and comments. In our academic curriculum, visual supports are used to clarify content and instructional information.[11]

Visual Instruction involves the simultaneous use of symbols to support material introduced in spoken language. It improves comprehension by imposing a systematically constructed visual model that compliments speech. It is employed in several related approaches referred to as aided language,[12] aided language stimulation,[13] augmented input,[14, 15] partner augmented input,[16] and visually cued speech.[17]

Visual Expression uses symbols to facilitate expressive communication. Often associated with augmentative communication, this is perhaps the most frequent application of visual materials. The potential benefit of a visually based communication strategy was first reported by Schuler & Baldwin,[18] who drew their conclusions from the strong visual-spatial skills of persons on the autism spectrum. This early work led to the widespread use and success of the PECS (Picture Exchange Communication System) for individuals with autism spectrum disorder.[19, 20, 21, 22] At Monarch School we employ some of the principles of the PECS approach, but we expand its content to increase our students' communicative growth.

Visual Organization entails using symbols to represent the organization of an activity, script or schedule.[23, 24, 25, 26, 27] Quill[28] suggests that children with autism should use assistive and augmentative communication (MC) devices to support their understanding of an item, person and/or event. These devices facilitate transitions at school and promote better understanding of sequenced activities in the curriculum.

## Technology and Learning

Research indicates that children with autism are very interested in computers as well as personal music, game and communications devices. Shane & Albert[29] found that: children on the autism spectrum have extensive interest in computers, television and video; animated characters are more interesting than human figures; and, the majority of children spend more time with electronic media than with all other forms of play combined.

Individuals with Autism Spectrum Disorder may demonstrate a specific attraction to visually oriented materials including computer programs, object categorizations and other activities that rely on visual-spatial and constructional capacities.[30, 31] These individuals also show a high interest in children's videotapes, often in a perseverative, bordering on obsessive fashion.[32] Parents indicate that their children are "mesmerized" by certain tapes and report deferred imitation of activities depicted on the tapes. A video, like a computer screen, offers a captivating learning environment that has enormous appeal to children with Autism Spectrum Disorder. Furthermore, these children may be attracted

## Technology and Learning (continued)

to videos and computers because no social factors are involved.[33] Moore & Calvert,[34] for example, reported that children with Autism Spectrum Disorder were attentive to a computer-generated lesson 97% of the time (learning 74% of the targeted nouns) but attentive to a teacher-directed lesson only 62% of the time (learning 41% of the targeted nouns). Parental reports are supported by studies that have effectively taught problem-solving skills,[35] social scripts, and communication skills through the use of computers and/or videotapes.[36] Videotapes have also been used to teach conversational skills, and to present scenarios of individuals performing functional skills across various settings in the community. Video has also been described as a cost-efficient and convenient strategy to train new skills and promote generalization to unfamiliar settings.[37, 38] Research indicates that students with Autism Spectrum Disorder[39] and developmentally delayed students could accurately imitate peer models. Additionally, research demonstrates that developmentally delayed students could accurately imitate videotape models,[40] and one study found video presentations to be more effective than live models.[41] A review of that research suggests that modeling correct behavior from a video presentation produces success. Thus, appropriately designed computer and/or video programs may represent an effective therapeutic technique for children with autism, and one used instructionally at Monarch School.

## Outcomes Management System

Educators, clinicians and researchers have long recognized the lack of valid and reliable tools for measuring the effectiveness of intervention for children with Autism Spectrum Disorder.[42, 43, 44] Developing assessment tools is challenging because children with autism display a vast range of symptoms and severity. In addition, discipline-specific tools may not meet interdisciplinary team needs, and there isn't a coherent conceptual framework for measuring treatment effectiveness.

Without acceptable tools for measuring change over time, many have resorted to using measures designed for diagnostic purposes including the Childhood Autism Rating Scale (CARS),[45] the Gilliam Autism Rating Scale (GARS),[46] and the Autism Behavior Checklist (ABC).[47] The Autism Treatment Evaluation checklist (ATEC)[48] claims to assess the effectiveness of autism treatment. The ATEC is a one page form that includes ratings of subtests for the following categories: speech/communication; sociability; sensory/cognitive awareness; and health/physical/behavior. It is recommended that parents, teachers or caretakers complete the form by indicating "how true" each descriptive phrase (e.g. "Knows own name") is under each category. Assigned Ratings indicate that the ATEC statements are "not true" (N), "somewhat true" (S) or, "very true" (V). The ATEC appears to lack the sensitivity necessary to monitor subtle changes or progress in complex behaviors associated with Autism Spectrum Disorder. In addition, the ATEC is not conceptually relevant and does not identify factors that may hinder improvement.

The Participation Accuracy Independence Scales (PAIRS©) are a cross disciplinary outcomes assessment tool and a computerized data management system. They are used to monitor and refine educational interventions, inform staff meetings and parent staffings, complete quarterly progress reports, and document outcomes for educational programs and for the entire school. They allow school personnel to measure the progress of educational and clinical interventions for children on the autism spectrum. The scales are conceptually consistent with The World Health Organization's[49] perspective on functioning and disability. Specifically, the PAIRS rating scales capture how well and independently students manage in educational and clinical contexts given their level of functioning and known barriers to success.

The PAIRS include two separate rating scales. The first is the Accuracy/Independence (AI) scale, which captures how accurately and independently a student performs an educational activity. Supplemental AI codes are used to identify the types of assistance (e.g., gestural, verbal) that facilitate the highest level of accurate responding. The second is the Participation (P) rating scale, which measures the level of active participation during a teacher-learning exchange. P scale subscripts help to identify probable reasons for a student's lack of full participation in a lesson. Thus, problems

## Outcomes Management System (continued)

with attention, behavior and other factors that interfere with active learning are monitored so that appropriate adjustments can be made to educational plans to reduce or minimize interfering behaviors. Together the two scales provide a means of evaluating the accuracy of performance, level of independence and the level of active participation in a task. Clinicians and teachers use the scales to assess baseline or entry level of performance on goals and objectives for students' Individual Educational Plans (IEPs). Because the PAIRS scales have proven to be sensitive to change over time, they are used to monitor progress made on IEPs.

The PAIRS are not discipline specific and they have been adapted by all members of our multidisciplinary team. In addition, the scales have been applied to a wide variety of educational and clinical approaches ranging from structured and didactic to more naturalistic settings of information without requiring an overly complex number system, and they appear to be sensitive enough to capture meaningful change in a student's performance. Furthermore, the coding system is intuitive and useful for both professionals and the lay public.

All teachers and clinicians at Monarch School use the PAIRS to track outcomes on students' IEP goals and objectives. Data sheets, which are used to record scale scores for each objective, are scanned into a central database that automatically summarizes individual student data. The computerized system tracks data over time (by academic quarters) according to whether Ohio state standards are met for IEP goals and objectives. Automated reports indicate whether goals and objectives have been *Mastered* (M), or if *Adequate Progress (AP)*, *Minimal (M)*, or *No Progress (NP)* was achieved according to pre-specified performance criteria. Reports also summarize the percentage of objectives that have met pre-specified criteria for levels of mastery for each IEP goal.

At the end of the year, student reports are generated that contain both quarter-by-quarter progress and a year-end summary of progress. Reports are organized by functional domain. Therefore, progress can be viewed for goals and objectives within educational categories (e.g., ADLs, Behavioral, Math, Speech-Language etc.) for each student, group of students, and for the school. The Monarch Outcomes Management system facilitates an evidence-based approach to the educational management of children on the autism spectrum.

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