

CHARACTERISTICS OVERVIEW CHART

Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
<input checked="" type="checkbox"/> Nonverbal	<input checked="" type="checkbox"/> PK	<input checked="" type="checkbox"/> Classic	<input checked="" type="checkbox"/> (Pre)Academic/Cognitive/Academic
<input checked="" type="checkbox"/> Mixed	<input checked="" type="checkbox"/> Elementary	<input checked="" type="checkbox"/> High Functioning	<input checked="" type="checkbox"/> Adaptive Behavior/Daily Living
<input checked="" type="checkbox"/> Verbal	<input checked="" type="checkbox"/> Middle/High		<input checked="" type="checkbox"/> Behavior
			<input checked="" type="checkbox"/> Communication/Speech
			<input checked="" type="checkbox"/> Social/Emotional

BRIEF INTRODUCTION

Many students with autism (AU) are troubled when they do not know the schedule or upcoming activities. Some repeatedly ask, “What’s next” or “When’s reading?” Others experience high levels of anxiety throughout the day. Priming addresses these needs as a low-cost, time-efficient strategy that provides structure and predictability for students across the spectrum.

DESCRIPTION

Simply stated, the purposes of priming are to (a) familiarize the student with the material before its use; (b) introduce predictability into the information or activity, thereby reducing stress and anxiety; and (c) increase student success. Priming typically involves showing the actual materials that will be used in a lesson the day or morning before the lesson. In some cases, priming may occur right before the activity, such as when a peer mentor overviews what will occur during the science experiment just prior to the beginning of science class. Priming for a school day can be accomplished in less than 10 minutes.

Priming can take place in the classroom or at home. It is most effective when it is built into the student’s routine. The following are important characteristics of effective priming: (a) priming should occur in an environment that is relaxing; (b) the primer should be patient and encouraging; (c) the priming sessions should be short; and (d) materials should be introduced. It is important to note that priming is *not* teaching, correcting, or testing.

Examples of priming include:

- Looking at a worksheet
- Looking through a book
- Overviewing a test
- Showing a visual schedule or list of activities in a task

- Practicing with new art supplies
- Showing a finished product
- Viewing a work sample

STEPS

The following steps may be used to prime a student:

1. *Determine when to prime.* Priming can occur at the beginning or at the end of the day. Some students who have difficulty processing a lot of information may need to be primed throughout the day. For example, a student may be primed for the morning activities at the beginning of the day and after lunch for the remainder of the day.
2. *Identify who should lead this activity.* Anyone who has a rapport with the student can prime. An adult can even prime for a subject she is not fully familiar with because priming is *not* teaching. It is previewing.
3. *Decide where priming should occur.* Priming should occur in a quiet place to enhance the child's attention.
4. *Gather materials for priming and visual schedule.* Priming was originally designed by Wilde, Koegel, and Koegel (1992) to include the actual materials used (books, worksheets, etc.), so all materials that the student will use should be gathered in the priming area. For middle and high school students, a drop box is typically designated where all teachers can place materials for the priming session. Priming also includes overviewing the visual schedule. Thus, the visual schedule may be used to guide introduction to the materials. Educators may decide *after* successfully using priming with a student to switch to priming using only a visual schedule.
5. *Overview the materials.* Briefly overview each activity with the student, showing accompanying products.
6. *Record priming and make any relevant comments.* During this step, the primer shows the student what will occur during the lesson by introducing the materials and class expectations. As mentioned, priming is not instruction; the primer tells the student what activities she will be doing during each class and shows the materials that will be used, often with an accompanying visual schedule. This brief review of the day's activities usually takes no more than 10 minutes. The primer may condense the activities onto an index card that

the child can carry to class and refer to it as needed. The student is reinforced for attending to the material during the priming session.

The following is an example of a priming worksheet.

PRIMING WORKSHEET

Student's Name

Date	Primed (Y/N)	Primer	Comments

BRIEF EXAMPLE

Instead of meeting her classmates in the gym to await the beginning of a new school day, 10-year-old Kara meets a paraprofessional, Mr. Aaron, in the resource room for priming. Mr. Aaron, who has Kara’s visual schedule as well as the books and materials she will use throughout the day, ensures that Kara is ready to begin priming. Sometimes this means that Kara sits in a beanbag chair during the activity; at other times she sits at a desk.

Mr. Aaron then begins to systematically overview the day. He starts by showing Kara her visual schedule, which starts with an icon representing priming. Mr. Aaron leafs through each book that Kara will use, showing her the pages that she will read and letting her look at each worksheet she will complete. For social studies, he points out that Kara will only read the highlighted sections. He reminds Kara that, according to her schedule, she will have a spelling test. He then shows her a completed spelling test, reminding her that she can choose whether to write the answers or type them. When the 10-minute priming session ends. Mr. Aaron completes the priming work sheet, making a notation that Kara was excited about the spelling test because she knew how to spell all of the words.

TIPS FOR MODIFICATION

Koegel, Koegel, Frea, and Green-Hopkins (2003) proposed many priming modifications. For example, if the student cannot sit and attend, allow him to be primed while lying on the floor or

standing. If he is not motivated, offer a small reinforcer at the end of the session. Another modification is to use only a visual schedule or a visual schedule accompanied by a list of activities instead of the actual work products. This is not recommended unless the child has been successfully primed over a period of time using actual work products.

SUMMARY

Priming can help children and youth improve their academic and behavioral skills. This intervention can be used in home, school, and community with children and adolescents with autism.

RESEARCH TABLE

Number of Studies	Ages (year)	Sample Size	Area(s) Addressed	Outcome
25*	3-15	28	Academic responding, appropriate behavior, disruptive behaviors, spontaneous initiations, toileting, compliance with dental exam, play skills, daily living skills	+

*Note: This number includes a review of literature conducted by Lang et al. (2011).

STUDIES CITED IN RESEARCH TABLE

- Greenwald, A.E., Williams, W.L., & Seniuk, H. (2013). Decreasing supermarket tantrums by increasing shopping tasks: Advantages of pre-teaching. *Journal of Positive Behavior Interventions*, 16(1), 56-59.
The purpose of this study was to evaluate the effects of pre-teaching on the skills needed to gather items at the grocery store for an 8-year-old girl with autism. The participant had a history of engaging in tantrum behavior at the grocery store in order to gain access to preferred edibles. The purpose of pre-teaching was to give the participant the skills needed to follow a simple grocery list with the names of common items the family purchased in order for her to have a task to complete while grocery shopping. When the participant successfully found the items at the grocery store without engaging in a tantrum, she would receive access to a preferred edible. Results of the study showed that pre-teaching at home was successful for the participant. She was able to gather items on the list at the grocery store with 100% accuracy by the end of the study and did not engage in any tantrum behavior once the intervention began. Parents reported high satisfaction with this intervention.
- Cihak, D. F., Smith, C. C., Cornett, A., & Coleman, M. (2012). The use of video modeling with the picture exchange communication system to increase independent communicative initiations in preschoolers with autism and developmental delays. *Focus on Autism and Other Developmental Disabilities*, 27(1), 3-11.

The use of video modeling (VM) procedures in conjunction with the picture exchange communication system (PECS) to increase independent communicative initiations in preschool-age students was evaluated in this study. The four participants were 3-year-old children with limited communication skills prior to the intervention. Two of the students had been diagnosed with autism and two students exhibited developmental delays. An alternating treatments design was used to examine the effects of using VM as a priming technique to enhance the efficacy of students acquiring PECS and increasing the number of independent communicative initiations. Based on the data, the authors concluded that all students learned to use PECS and increased the number of independent communicative initiations; however, the students' rate of learning was quicker when using VM.

3. Lang, R., Kuriakose, S., Lyons, G., Mulloy, A., Boutot, A., Britt, C., Caruthers, S., & Ortega, L., O'Reilly, M., Lancioni, G. (2011). Use of school recess time in the education and treatment of children with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders, 5*, 1296-1305.
In this collection of fifteen studies involving 46 children with AU, the impact of interventions on recess was evaluated. One of the studies used priming.
4. Cuvo, A.J., Godard, A., Huckfeldt, R., & DeMattei, R. (2010). Training children with autism spectrum disorders to be compliant with an oral assessment. *Research in Autism Spectrum Disorders, 4*, 681-696.
This study reported the results of an evaluation of the effects of a behavioral intervention package (preference assessments, stimulus fading, distraction, extended baseline exposure to aversive stimuli, video priming, prompting (i.e., verbal instructions, photo, gestural, physical), differential reinforcement, and escape extinction) to improve the compliance of five young boys with ASD during dental exams. The package was successful in increasing compliance with all steps in the dental exam for four of the participants, and for all but one exam step for the fifth boy.
5. Sancho, K., Sidener, T.M., Reeve, S.A., & Sidener, D.W. (2010). Two variations of video modeling interventions for teaching play skills to children with autism. *Education and Treatment of Children, 33*(3), 421-442.
This study compared the rates of play skills acquired by two children with ASD as a results of video modeling procedures of two kinds: simultaneous video modeling where the child was prompted to play with the toys while the video played, and video priming where the child watched the video without the toys present before being allowed to play with them. Both children learned play skills using both kinds of video modeling procedure.
6. Sawyer, L. M., Luiselli, J. K., Ricciardi, J. N., & Gower, J. L. (2005). Teaching a child with autism to share among peers in an integrated preschool classroom: Acquisition, maintenance, and social validation. *Education and Treatment of Children, 28*, 1-10.
A 4-year-old boy with autism participated in a study that targeted verbal and physical sharing with typical peers in an inclusive classroom setting. Using priming in combination with prompting and praise over 60 days, the child's sharing increased.
7. Koegel, L. K., Koegel, R. L., Frea, W., & Green-Hopkins, I. (2003). Priming as a method of coordinating services for students with autism. *Language, Speech, and Hearing Services in School, 34*, 228-235.
Two boys with autism (5.6 and 15 years) participated in a study that targeted academic responding and appropriate behavior. Over 21 days, both behaviors increased.

8. Schreibman, L., Whalen, C., & Stahmer, A. C. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. *Journal of Positive Behavior Interventions, 2*, 3-11.
Three boys with autism, ranging in age from 3- to 6-years-old, participated in a study designed to decrease disruptive behaviors. Using video to introduce transition for 21 days, the boys' disruptive behaviors decreased and were maintained in a one-month follow-up.
9. Bainbridge, N., & Myles, B. S. (1999). The use of priming to introduce toilet training to a child with autism. *Focus on Autism and Other Developmental Disabilities, 14*(2), 106-109.
A 3-year-old boy with AU participated in a study designed to teach toileting. Using video to introduce a routine for 20 days, the boy's toilet initiations and dry diapers increased.
10. Zanolli, K., Daggett, J., & Adams, T. (1996). Teaching autistic children to make spontaneous initiations to peers using priming. *Journal of Autism and Developmental Disorders, 2*, 407-422.
Two preschool-age boys with autism participated in a study designed to increase spontaneous initiations. Over 20 days, spontaneous initiations increased.

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- Bainbridge, N., & Myles, B. S. (1999). The use of priming to introduce toilet training to a child with autism. *Focus on Autism and Other Developmental Disabilities, 14*(2), 106-109.
- Cihak, D. F., Smith, C. C., Cornett, A., & Coleman, M. (2012). The use of video modeling with the picture exchange communication system to increase independent communicative initiations in preschoolers with autism and developmental delays. *Focus on Autism And Other Developmental Disabilities, 27*(1), 3-11.
- Cuvo, A.J., Godard, A., Huckfeldt, R., & DeMattei, R. (2010). Training children with autism spectrum disorders to be compliant with an oral assessment. *Research in Autism Spectrum Disorders, 4*, 681-696.
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- Lang, R., Kuriakose, S., Lyons, G., Mulloy, A., Boutot, A., Britt, C., Caruthers, S., & Ortega, L., O'Reilly, M., & Lancioni, G. (2011). Use of school recess time in the education and treatment of children with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders, 5*, 1296-1305.
- Sancho, K., Sidener, T.M., Reeve, S.A., & Sidener, D.W. (2010). Two variations of video modeling interventions for teaching play skills to children with autism. *Education and Treatment of Children, 33*(3), 421-442.

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- Schreibman, L., Whalen, C., & Stahmer, A. C. (2000). The use of video priming to reduce disruptive transition behavior in children with autism. *Journal of Positive Behavior Interventions, 2*, 3-11.
- Wilde, L. D., Koegel, L. K., & Koegel, R. L. (1992). *Increasing success in school through priming: A training manual*. Santa Barbara: University of California.
- Zanolli, K., Daggett, J., & Adams, T. (1996). Teaching autistic children to make spontaneous initiations to peers using priming. *Journal of Autism and Developmental Disorders, 2*, 407-422.

ORGANIZATIONS RECOGNIZING INTERVENTION AS EVIDENCE BASED

Centers for Medicaid and Medicare Services: <http://www.cms.gov>

National Autism Center: <http://www.nationalautismcenter.org>

National Professional Development Center on Autism Spectrum Disorders:
<http://autismpdc.fpg.unc.edu>

RESOURCES AND MATERIALS

- Change Is Good! Supporting Students on the Autism Spectrum When Introducing Novelty: <http://www.iidc.indiana.edu/index.php?pageId=409>
This article gives solid information about the use of priming in the classroom.

GENERAL RESOURCES

- Autism Internet Modules (AIM) www.autisminternetmodules.org. The Autism Internet Modules were developed with one aim in mind: to make comprehensive, up-to-date, and usable information on autism accessible and applicable to educators, other professionals, and families who support individuals with autism spectrum disorders (ASD). Written by experts from across the U.S., all online modules are free, and are designed to promote understanding of, respect for, and equality of persons with ASD.
- Evidence-Based Practice Briefs
<http://autismpdc.fpg.unc.edu/content/briefs>
- Indiana Resource Center for Autism (IRCA) <http://www.iidc.indiana.edu/index.php?pageId=32/>. The Indiana Resource Center for Autism staff's efforts are focused on providing communities, organizations, agencies, and families with the knowledge and

skills to support children and adults in typical early intervention, school, community, work, and home settings.

- IRCA Articles: <http://www.iidc.indiana.edu/index.php?pagelid=273>
- Texas Statewide Leadership for Autism www.txautism.net. The Texas Statewide Leadership for Autism in conjunction with the network of Texas Education Service center with a grant from the Texas Education Agency has developed a series of free online courses in autism. Please check the training page, <http://www.txautism.net/trainings>, for updated lists of courses, course numbers, and registration information.
 - Current courses include the following:
 - ❖ Asperger Syndrome 101
 - ❖ Augmentative and Alternative Communication and the Autism Spectrum
 - ❖ Autism for the General Education Teacher
 - ❖ Autism 101: Top Ten Pieces to the Puzzle
 - ❖ Classroom Organization: The Power of Structure for Individuals with ASD
 - ❖ Communication: The Power of Communication for Individuals with ASD
 - ❖ Futures Planning for Students with Autism Spectrum Disorder
 - ❖ Navigating the Social Maze: Supports and Interventions for Individuals with ASD
 - ❖ Solving the Behavior Puzzle: Making Connections for Individuals with ASD
 - Strategies for Working with Students with Autism in the General Education Setting:
 - ❖ Strategy 1: Understanding Students with Autism Spectrum Disorders.
 - ❖ Strategy 2: Get to Know the Individual Student.
 - ❖ Strategy 3: Create Predictability.
 - ❖ Strategy 4: Develop Clear Expectations, Part 1 -- Social and Behavioral.
 - ❖ Strategy 5: Develop Clear Expectations, Part 2 --Academic.
 - ❖ Strategy 6: Create a Positive Learning Community.
 - ❖ Strategy 7: Promote Positive Peer Interaction.
 - ❖ Strategy 8: Use Instructional Strategies That Promote Successful Learning.
 - ❖ Strategy 9: Use Behavioral Strategies That Promote Success Learning.
 - ❖ Strategy 10: Develop a Plan to Address Challenging Behavior.
 - ❖ Strategy 11: Borrow from the Special Educator's Toolbox.
 - ❖ Strategy 12: Respect Each Student's Dignity and Need for Autonomy
 - School-Based Applied Behavior Analysis Programs for Students with Autism Spectrum Disorders:
 - ❖ Course 1: Introduction to Autism Spectrum Disorders, Evidence-Based Practices, and the Basics of Applied Behavior Analysis (45 minutes)
 - ❖ Course 2: Reinforcement and Extinction (1.5 hours)
 - ❖ Course 3: Challenging Behavior Assessment and Treatment (1 hour)
 - ❖ Course 4: Communication and Social Skills Training (1 hour)
 - ❖ Course 5: Instructional Strategies (4 hours)
 - ❖ Course 6: Classroom and Environmental Arrangement (1.5 hours)