

Autism – What Is It?

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In collaboration with the Centers for Disease Control and Prevention's
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Students will use resources from the Centers for Disease Control and Prevention (CDC) to investigate the symptoms of Autism Spectrum Disorders (ASDs) and compare expected child development to development that might indicate a diagnosis of ASDs. A final project will be the preparation of posters showing the signs of ASDs. These posters will be displayed in a community library, clinic or other public building.

Disclaimer: The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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Summary

Students will use resources from the Centers for Disease Control and Prevention (CDC) to investigate the symptoms of Autism Spectrum Disorders (ASDs) and compare expected child development to development that might indicate a diagnosis of ASDs. A final project will be the preparation of posters showing the signs of ASDs. These posters will be displayed in a community library, clinic or other public building.

Learning Outcomes

- Students will be able to describe the signs of ASDs.
- Students will be able to compare expected developmental behaviors to those seen in children with ASDs.

Materials

1. Simulated case study handout
2. Computers with Internet access
3. Poster board
4. Markers, crayons, colored pencils and other basic art supplies

Total Duration

2 hours, 45 minutes

Procedures

Teacher Preparation

Teachers might find it helpful to preview the CDC Web sites below to gain a better understanding of ASDs. Teachers should print and copy the simulated case study for student use in the pretest and posttest activities. As a final project, students will prepare ASDs posters. Teachers should arrange for posters to be displayed in an appropriate public location. Throughout the lesson, it is important that teachers reinforce the idea that observed behaviors discussed in this lesson do not necessarily warrant a diagnosis of ASDs.

Web Resources

Title: Learn the Signs. Act Early. National Center on Birth Defects and Developmental Disabilities (NCBDDD).

URL: <http://www.cdc.gov/ncbddd/autism/ActEarly/>

Description: This CDC resource provides information on Autism Spectrum Disorders as well as expected developmental behavior in children.

Title: Autism: Topic Home. NCBDDD.

URL: <http://www.cdc.gov/ncbddd/autism/>

Description: This CDC resource provides basic information about ASDs including signs, diagnosis and possible causes.

Introduction

Duration: 15 minutes

What do students know about ASDs?

Because many students will not have any background knowledge in ASDs, it is suggested that students complete the following pretest, Peter's Case Study, with partners or in small groups. In this pretest, students will read a simulated case study. After reading the case study, each group will list the characteristics they think might be observed in a child with ASDs.

Supplemental Document

Title: Peter's Case Study: What Are the Signs of Autism?

Description: Students will use this case study as a preassessment tool to determine their knowledge of ASDs. This simulated case study represents many general behaviors that might be seen in a child with ASDs, and does not represent a real family. Because students might not understand what "simulated" means, teachers might need to explain this concept prior to beginning the activity.

Step 2

Duration: 45 minutes

What are ASDs?

In this step, student partners will explore Web resources to find five facts about ASDs. Each group will present their facts to the class. Because a long list of Web sites could be overwhelming for some students, teachers might wish to assign one or two Web sites per group. This will also ensure all resources are utilized.. Following the presentations, allow time for whole-group discussion on the signs and diagnosis of ASDs. As part of this discussion, encourage students to discuss ways in which a student's life would be different if he had one of those signs of autism that impacted the way he communicated, interacted or learned. At this point, the class should be able to prepare a working definition of ASDs.

Web Resources

Title: Learn the Signs. Act Early. ASD Fact Sheet-NCBDDD.

URL: <http://www.cdc.gov/ncbddd/autism/ActEarly/autism.html>

Description: This CDC resource provides information on Autism Spectrum Disorders as well as expected developmental behavior in children.

Title: Autism: Topic Home. NCBDDD.

URL: <http://www.cdc.gov/ncbddd/autism/>

Description: This CDC resource provides basic information about Autism Spectrum Disorders including signs, diagnosis and possible causes.

Title: Common Characteristics of Autism

URL: <http://www.autism-society.org/site/PageServer?pagename=autismcharacteristics>

Description: This resource is from the Autism Society of America Web site. It provides basic information about ASDs including signs, diagnosis and possible causes.

Title: Kids' Quest On Disability and Health: Autism. NCBDDD

URL: <http://www.cdc.gov/ncbddd/kids/kautismpage.htm>

Description: This CDC resource provides basic information about ASDs including signs, diagnosis and possible causes.

Supplemental Document

Title: Web Resource Example Fact Sheet

Description: This document provides examples of facts from the Web sites provided in this step.

Step 3

Duration: 45 minutes

Comparing Expected Development to ASDs Diagnosis.

In this step, student partners will again make use of Web resources. Students should prepare a list of ten expected stages of child development and their counterparts that might be linked to a diagnosis of ASDs. This information will be used when designing their posters. Because peak diagnosis of ASDs is eight years of age, students should focus on a time range of three to nine years of age. Allow time for whole-group discussion on expected development versus factors that might indicate a diagnosis of ASDs. After data collection, compare/contrast expected behavior of child development for a child without autism versus observed behavior in a child with autism. Instructors may refer to the supplemental guide “Instructor Supplement: Expected Developmental Behaviors Versus Observed Behaviors in Children with ASDs”.

Web Resources

Title: Learn the Signs. Act Early. ASD Fact Sheet-NCBDDD.

URL: <http://www.cdc.gov/ncbddd/autism/ActEarly/autism.html>

Description: This CDC resource provides information on Autism Spectrum Disorders as well as expected developmental behavior in children.

Title: Autism: Topic Home. NCBDDD.

URL: <http://www.cdc.gov/ncbddd/autism/>

Description: This CDC resource provides basic information about Autism Spectrum Disorders including signs, diagnosis and possible causes.

Title: American Academy of Pediatrics: The Pediatrician's Role in the Diagnosis and Management of Autistic Spectrum Disorder in Children

URL: <http://pediatrics.aappublications.org/cgi/content/full/107/5/1221>

Description: This resource is an article from *Pediatrics* that provides basic information about ASDs including signs, diagnosis and possible causes.

Title: Common Characteristics of Autism

URL: <http://www.autism-society.org/site/PageServer?pagename=autismcharacteristics>

Description: This resource is from the Autism Society of America Web site. It provides basic information about ASDs including signs, diagnosis and possible causes.

Title: Kids' Quest On Disability and Health: Autism. NCBDDD

URL: <http://www.cdc.gov/ncbddd/kids/kautismpage.htm>

Description: This CDC resource provides basic information about ASDs including signs, diagnosis and possible causes.

Supplemental Document

Title: Instructor Supplement: Expected Developmental Behaviors versus Observed Behaviors in Children with ASDs

Description: This supplement provides a range of expected developmental behaviors versus behaviors possibly observed in a child with ASDs.

Conclusion

Duration: 1 hour

Design of Posters.

In this step, students will bring together all they have learned to prepare posters showing expected development versus observed behavior in a child with an ASD. Prior to giving this assignment, teachers should review the grading expectations/rubric with students. Following

completion of posters, administer Peter's Case Study as a posttest to determine students' understanding of the signs and diagnosis of ASDs.

Supplemental Documents

Title: Peter's Case Study: What Are the Signs of Autism?

Description: This simulated case study represents many general behaviors that might be seen in a child with an ASD, and does not represent a real family. Because students might not understand what "simulated" means, teachers might need to explain this concept to students.

Title: Rubric Assessment for ASDs Poster Project

Description: This rubric will be used to score student poster projects.

Assessment

Student posters will be scored using the "Rubric Assessment for ASDs Poster Project" included in the conclusion step.

Modifications

Extensions

1. As an extension activity, students could be assigned the task of developing a hypothesis and designing a simulated investigation to test the effects of a particular factor on the development of ASDs.
2. Teachers wishing to provide more opportunities for practice of literacy skills could use journaling. Topics for journal entries could include:
 - Describe a day in the life of a seventh grader with an ASD.
 - Many people do not understand ASDs, and might think a child with an ASD is ignoring them or being rude. Based on what you now know about ASDs, how would you respond to these people if your brother or sister had an ASD?
3. Teachers might wish to add a graphing component to this lesson. Students could use data found at the CDC Web site to prepare graphs showing diagnosis trends of ASDs over time.

Web Resource

Title: Autism: Topic Home. NCBDDD

URL: <http://www.cdc.gov/ncbddd/autism/>

Description: This CDC resource provides basic information about Autism Spectrum Disorders including signs, diagnosis and possible causes.

Education Standards

National Science Education Standards

SCIENCE AS INQUIRY, CONTENT STANDARD A:

As a result of activities in grades 5-8, all students should develop

- **Abilities necessary to do scientific inquiry**

- Understandings about scientific inquiry

LIFE SCIENCE, CONTENT STANDARD C:

As a result of their activities in grades 5-8, all students should develop understanding of

- **Structure and function in living systems**
- Reproduction and heredity
- **Regulation and behavior**
- Populations and ecosystems
- Diversity and adaptations of organisms

SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES, CONTENT STANDARD F:

As a result of activities in grades 5-8, all students should develop understanding of

- **Personal health**
- Populations, resources, and environments
- Natural hazards
- **Risks and benefits**
- Science and technology in society

HISTORY AND NATURE OF SCIENCE, CONTENT STANDARD G:

As a result of activities in grades 5-8, all students should develop understanding of

- Science as a human endeavor
- **Nature of science**
- History of science

Peter's Case Study: What Are the Signs of Autism Spectrum Disorders?

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Read all information carefully. Underline any vocabulary words with which you are not familiar. After reading the case study, list the characteristics you think might be observed in a child with an Autism Spectrum Disorder.

Mr. and Mrs. Howard have a son named Peter. Peter is three years old. Because Mr. and Mrs. Howard are concerned about some of Peter's behaviors, they have made an appointment with their pediatrician. Dr. Owen, their pediatrician, asked Mr. and Mrs. Howard to describe some of Peter's activities and behaviors. Their description follows:

Peter is a beautiful little boy with blond hair and blue eyes. Even though he is three years old, he often does not talk very much. When Peter's mom tries to cuddle with him during story hour, Peter does not look at her. He does not like to be held if someone else gives him a hug, but he runs up and squeezes his parents. Peter often sits on the porch with his toy cars. He likes to roll them back and forth. Peter's older sister wants to play with Peter, but he is not interested in playing along. Peter likes to look at his picture book. He can even name all of the colors of the blocks shown on the pages. Often, when Peter's mom tells him it is time for lunch, Peter does not respond. He seems quite content to sit with his cars, his ball or his picture book. Peter also knows a lot about dinosaurs, and is very interested in books with pictures of dinosaurs.

This case study is not based on a real family.

Web Resource Example Fact Sheet

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The following are examples of some facts about ASDs that students will research on the Web resources given in Step 2 of the "Autism-What Is It?" lesson plan.

1. Title: Learn the Signs. Act Early. ASD Fact Sheet. NCBDDD.
URL: <http://www.cdc.gov/ncbddd/autism/ActEarly/autism.html>
Answers may vary.
 - ASDs consist of several developmental disorders caused by problems with the brain.
 - A child with an ASD might avoid eye contact.
 - A child with an ASD might have difficulty relating to other people.
 - A child with an ASD might have difficulty adapting to a change in routine.
2. Title: Autism: Topic Home. NCBDDD.
URL: <http://www.cdc.gov/ncbddd/autism/>
Answers may vary.
 - People with ASDs might have trouble understanding other people's feelings or talking about their own feelings.
 - Scientists think that both genetics and the environment might play a major role in the cause of ASDs.
 - ASDs begin during childhood and last throughout an individual's life.
3. Title: Common Characteristics of Autism
URL: <http://www.autism-society.org/site/PageServer?pagename=autismcharacteristics>
Answers may vary.
 - A person with autism might have problems starting or maintaining a conversation.
 - A person with autism might have an inappropriate attachment to objects.
 - A child with autism can learn and function productively.
 - Behaviors associated with autism differ in severity among individuals diagnosed with autism.
4. Title: Kids' Quest On Disability and Health: Autism. NCBDDD
URL: <http://www.cdc.gov/ncbddd/kids/kautismpage.htm>
Answers may vary.
 - A child with an ASD might repeat actions over and over again.
 - Almost 40% of children with ASDs do not talk.

References

1. CDC. Autism Spectrum Disorders Fact Sheet. [cited 2005 July 20]. Available from URL: <http://www.cdc.gov/ncbddd/autism/ActEarly/autism.html>.
2. CDC. Autism: Topic Home. [cited 2005 July 20]. Available from URL: <http://www.cdc.gov/ncbddd/autism/>.

3. Autism Society of America. Common Characteristics of Autism. [cited 2005 July 20]. Available from URL: <http://www.autismsociety.org/site/PageServer?pagename=autismcharacteristics>.

4. CDC. "Autism Spectrum Disorder (ASD) Quest". [cited 2005 July 20]. Available from URL: <http://www.cdc.gov/ncbddd/kids/kautismpage.htm>

Instructor Supplement: Expected Developmental Behaviors versus Observed Behaviors in Children with ASDs

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Expected Developmental Behavior

3 Years(1)

- Uses 4 to 5-word sentences
- Uses pronouns (I, you, me, we, they) and some plurals (cars, dogs, cats)
- Completes puzzles of 3-4 pieces
- Plays make-believe with dolls, animals and people (“feeds” a teddy bear)
- Imitates adults and playmates (runs when other children run)

4 Years(2)

- Speaks clearly and in sentences of 5 to 6 words
- Follows 3-step commands
- Pretends to be “mom” or “dad”
- Cooperates with other children and negotiates to solve conflicts

5 Years(3)

- Says own name and address
- Attempts to please and be like friends
- Counts out 10 or more objects
- Understands the difference between fantasy and reality

Behavior Possibly Observed in a Child with ASDs (4)

According to the CDC, a child might:

- not play “pretend” games
- not point at objects to show interest (point at an airplane flying over)
- not look at objects when another person points at them
- have trouble relating to others or not have an interest in other people at all
- avoid eye contact and want to be alone
- have trouble understanding other people’s feelings or talking about his/her own feelings
- prefer not to be held or cuddled or might cuddle only when he/she wants to
- appear to be unaware when other people talk to him or her, but respond to other sounds
- be very interested in people, but not know how to talk, play or relate to them
- repeat or echo words or phrases said to him or her, or repeat words or phrases in place of normal language
- have trouble expressing his or her needs using typical words or motions
- repeat actions over and over again
- have trouble adapting when a routine changes
- have unusual reactions to the way things smell, taste, look, feel or sound
- lose skills he or she once had (for instance, stop saying words that were once used)

References

1. CDC. Important Milestones: By the End of 3 Years (36 Months). [cited 2005 Jul 3]. Available from URL: http://www.cdc.gov/ncbddd/autism/actearly/milestones_3years.html.
2. CDC. Important Milestones: By the End of 4 Years (48 Months). [cited 2005 Jul 3]. (Available from URL: http://www.cdc.gov/ncbddd/autism/actearly/milestones_4years.html).
3. CDC. Important Milestones: By the End of 5 Years (60 Months). [cited 2005 Jul 3]. Available from URL: http://www.cdc.gov/ncbddd/autism/actearly/milestones_5years.html.
4. CDC. Autism Spectrum Disorders Fact Sheet. [cited 2005 Jul 3]. Available from URL: <http://www.cdc.gov/ncbddd/autism/actearly/autism.html>.

Rubric for Scoring Student Posters About Autism

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Name _____ Section _____

Descriptor	4 points			1 point	0 points	Points
Use of appropriate title	Title is creative and appropriate			Title is generic	No attempt	
	10 points	8 points	6 points	2 points	0 points	
Accuracy of information	All information is accurate and complete	Information is accurate, but not complete	Little information is included	Information is inaccurate	No attempt	
	10 points	8 points	6 points	2 points	0 points	
Comparison of typical behavior vs. concerned behavior	Poster shows good understanding of expected versus observed behavior	Poster shows understanding of expected behavior, but does not compare this to observed behavior	Poster shows some understanding of expected behavior, but no comparison to observed behavior	Poster shows no understanding of ASDs	No attempt	
	4 points	3 points	2 points	1 point	0 points	
Neatness and creativity	Poster is neat with no mark-throughs. Handwriting is neat. Creative design was utilized	Poster is neat with few mark-throughs. Poster indicates an attempt at creativity	Poster is neat, but does not utilize creativity	Poster shows little attempt at neatness or creativity	Poster is incomplete	
					Total Score	

Comments: _____
