

# What's Really True? Discovering the Fact and Fiction of Autism

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In this lesson, students will learn about a topic that has been in the news a lot recently—autism and autism spectrum disorders (ASDs). During the course of this lesson, they will evaluate information on several websites about ASDs and then make an informed decision about the truth of what they have read.

*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**

In this lesson, students will learn about a topic that has been in the news a lot recently—autism and autism spectrum disorders (ASDs). During the course of this lesson, they will evaluate information on several websites about ASDs and then make an informed decision about the truth of what they have read.

### **Learning Outcomes**

- Students will be able to evaluate information on a website for scientific reliability.
- Students will be able to give a brief account of what autism and ASDs are.
- Students will be able to create an eye-catching display with facts about autism and ASDs.

### **Materials**

1. Computers—one for each student group
2. Markers, paper, and other items needed to create a display or poster

### **Total Duration**

3 hours

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## **Procedures**

### **Teacher Preparation**

Review the websites listed below for some basic information about autism spectrum disorders (ASDs). Also review the PowerPoint presentation used in the first two steps of the lesson. Reserve computers or a computer lab for one or two class periods and bookmark the web page used in Step 4. Print off and copy all documents and web pages students will refer to during discussions/exercises. Gather supplies for making the posters to be produced in the conclusion.

#### **Web Resources**

Title: Facts about Autism

URL: [www.nichd.nih.gov/publications/pubs/autism1.htm](http://www.nichd.nih.gov/publications/pubs/autism1.htm)

Description: This National Institutes of Health website gives a good brief overview of ASDs.

Title: CDC Research on Vaccines and Autism

URL: [www.cdc.gov/nip/vacsafe/concerns/autism/autism-research.htm](http://www.cdc.gov/nip/vacsafe/concerns/autism/autism-research.htm)

Description: This CDC website gives information about the agency's investigation of a possible relationship between vaccines and ASDs.

Title: CDC's Autism Information Center

URL: [www.cdc.gov/ncbddd/dd/ddautism.htm](http://www.cdc.gov/ncbddd/dd/ddautism.htm)

Description: This CDC website gives information about ASDs and many links to more detailed information.

**Step 1: Introduction**

**Duration: 30 minutes**

Introduce students to the media and how public health issues are reported. Show the PowerPoint presentation through slide 8.

**Supplemental Document**

Title: Autism: What is the Truth?

File Name: autism.ppt

Description: This PowerPoint presentation is an introduction to media coverage of public health issues. Also included is a brief overview of ASDs.

**Step 2**

**Duration: 40 minutes**

Introduce the topic of ASDs by instructing the students to brainstorm what they know about autism and ASDs and writing their comments down. Because of the prevalence of ASDs and the wide range of behaviors included in the autistic spectrum, it is likely that students may know or be related to a person with an ASD, or that a student with an ASD might be present. It is important to treat this topic in a sensitive manner and give students ground rules for brainstorming. Let students know that there is no right or wrong answer in the brainstorming session and that they should not comment on other students' contributions. Emphasize that students need to be respectful in discussing the differences in people with ASDs. If you have not had experience with ASDs, you may want to see if the school nurse, special educator, guidance counselor, or a professional from the public health system can help facilitate this part of the discussion.

After the brainstorming session, complete the PowerPoint presentation. After the presentation, let the students know that they will be evaluating one type of media (web pages) the next day/class period.

**Supplemental Document**

Title: Autism: What is the Truth?

File Name: autism.ppt

Description: This Powerpoint presentation is an introduction to media coverage of public health issues. Also included is a brief overview of ASDs.

**Step 3**

**Duration: 20 minutes**

Remind the students about the links between public health and the media shown in the PowerPoint presentation in Step 2. Point out to students that ASDs have recently received a lot of media coverage, but that not all the information available is well researched. Tell the students that they will be using a tool to help them see if media, in this case web pages, are well referenced. Tell students that they will learn to use this tool by practicing with a website for a water purification system that is touted as a cure for autism. Visit the "Water Oz Home Page" website described below and go over the web page evaluation sheet on the overhead with the students following along. Provide copies of the referenced web page for students to look at as you fill out the evaluation sheet. Encourage discussion so students understand that filling out the evaluation is not always black and white. Focus on the questions on the evaluation page. The information is not good or bad, right or wrong: it is either well researched or not. The web pages are being evaluated objectively for the information given. Model for the students how to look objectively at the information.

### **Supplemental Document**

Title: Autism: Evaluating Web Pages

File Name: evaluating Web pages.doc

Description: This is a student worksheet for use in evaluating the web pages in this lesson.

### **Supplemental Document**

Title: Autism: Answer Key

File Name: waterozanswer.doc

Description: This is the answer key for filling out the “Evaluating Web Pages” worksheet on the Water Oz web page. A few answers may vary; as long as the teacher and the class can support their reasoning, this is okay.

### **Web Resource**

Title: Water Oz Home Page

URL: [wateroz.com/default.htm](http://wateroz.com/default.htm)

Description: This web page promotes a water purification system that is touted as a treatment for autism. This website will be used to demonstrate proper use of the “Evaluating Web Pages” worksheet. Either print this page and distribute to students or display it using an LCD projector and computer so all students can see it.

### **Step 4**

**Duration: 40–60 minutes**

Inform the students that they will now use the “Evaluating Web Pages” worksheet to find well-researched sites about autism. Let students know that they will use information from these sites to prepare a poster or display that includes accurate information about autism.

Divide the students into teams and have each team review a set of web pages. There will be one web page for each member of the team to review. Students should hand in web page evaluations before working on the final project. These web pages will all be about autism. However, in each group, some of the pages will be well researched and others will not. Although students will evaluate different web pages, they may work together on the evaluation. The students will have to work together once the evaluation is done and they start working on their projects.

### **Web Resource**

Title: What’s Really True?

URL: [www.kn.sbc.com/wired/fil/pages/listautismte.html](http://www.kn.sbc.com/wired/fil/pages/listautismte.html)

Description: A hot list created by the author that includes links to well- and poorly-researched websites. Students will fill out the “Evaluating Web Pages” worksheet using these links. The hot list includes links for four groups of three students each.

### **Conclusion**

**Duration: 40–60 minutes**

After students have completed their worksheets, instruct them to begin working on their poster. Each group must create a poster or display about autism giving accurate

information gleaned from the well-researched web pages they reviewed. Review the information students have collected before they begin their display. They should have the option to create a flyer, a poster, or a radio or TV announcement, or approach you with any other ideas they may have on how to present the information effectively. Encourage students to present their information to the class.

### **Supplemental Document**

Title: Autism Assessment Rubric

File Name: Autism Assessment Rubric.xls

Description: This Excel file contains a rubric for evaluating students' displays and presentations.

### **Assessment**

Students will learn to evaluate whether a website is well researched by filling out the worksheets provided in Step 3. Students will be evaluated on their displays and presentations in the conclusion step. The rubric provided in the conclusion step will be used to assess the information the students present.

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### **Modifications**

#### **Extension**

Have students use the "Important Milestones" pages on CDC's website to create a pictorial timeline of development. Give groups a category (social and emotional, movement, vision, hearing and speech) or an age with all categories in that age (3 months, 7 months, 1 year, 2 years, 3 years, 4 years).

#### **Web Resource**

Title: Learn the Signs. Act Early

URL: [www.cdc.gov/ncbddd/autism/ActEarly/default.htm](http://www.cdc.gov/ncbddd/autism/ActEarly/default.htm)

Description: CDC website that lists important milestones children should reach in different categories at different ages.

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### **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

## **ISTE National Educational Technology Standards for Students**

GRADE 6–8

PERFORMANCE INDICATORS:

Prior to completion of Grade 8 students will:

- **Demonstrate knowledge of current changes in information technologies and the effects those changes have on the workplace and society.**

### **State Standards**

State of Ohio

K–12 Science Benchmarks

6–8 program

#### ***Scientific Inquiry***

- A. Explain that there are differing sets of procedures for guiding scientific investigations, and procedures are determined by the nature of the investigation, safety considerations, and appropriate tools.
- B. Analyze and interpret data from scientific investigations using appropriate mathematical skills in order to draw valid conclusions.**

#### ***Scientific Ways of Knowing***

- A. Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description, and explanation).**
- B. Explain the importance of reproducibility and reduction of bias in scientific methods.
- C. Give examples of how thinking scientifically is helpful in daily life.**

**Evaluating Web Pages: How to Tell If a Site Is Well Researched**

**What's Really True? Discovering the Fact and Fiction of Autism**

**Beth MacLehose**

**CDC's 2005 Science Ambassador Program**

**URL:** \_\_\_\_\_

**1. Accuracy:**

- a. Who wrote the web page? \_\_\_\_\_
- b. Can you contact them?    **Yes**            **No**
- c. Do they have credentials that would lead you to believe they have expertise in the area?    **Yes**        **Maybe**        **No**

**Do you feel this web page is accurate?** \_\_\_\_\_

**Why or why not?** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**2. Authority:**

- a. What is the domain?    **edu**    **net**    **org**    **gov**    **other** \_\_\_\_\_
- b. When there are numbers or scientific claims on the web page, are they referenced so you know they didn't make the numbers or facts up?    **Yes**    **No**
- c. Does the author of the web page reference himself or herself or his or her company to prove the claim?    **Yes**    **No**
- d. Is information from a reliable source (some examples are government organizations like the Centers for Disease Control and Prevention, the National Institutes of Health, or large universities)?  
**Yes**    **No**

**If Yes, list sources:** \_\_\_\_\_

\_\_\_\_\_

Do you feel this web page is authoritative? \_\_\_\_\_  
Why or why not? \_\_\_\_\_

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**3. Objectivity:**

- a. Is this page being used to sell a product? **Yes**    **No**
- b. Is this page being used to make you believe a certain idea?  
**Yes**    **No**
- c. Does the author of this page use a lot of "I" statements instead of facts? **Yes**    **No**

Do you feel this web page is objective? \_\_\_\_\_  
Why or why not? \_\_\_\_\_

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**4. Currency:**

- a. When was the web page made? \_\_\_\_\_
- b. When was it last updated? \_\_\_\_\_
- c. Do the links work? **Yes**    **No**

Do you feel this web page is current? \_\_\_\_\_  
Why or why not? \_\_\_\_\_

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Overall, do you feel this web page contains well-researched information?  
Why or why not? \_\_\_\_\_

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**Evaluating Web Pages:**

URL: http://wateroz.com

**1. Accuracy:**

- a. Who wrote the web page? No name given
- b. Can you contact them?  **Yes**  **No**
- c. Do they have credentials that would lead you to believe they have expertise in the area?  **Yes**  **Maybe**  **No**

**Do you feel this web page is accurate?** No

**Why or why not?** No author is given so you don't know who wrote the information

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**2. Authority:**

- a. What is the domain? **edu net org gov other** com
- b. When there are numbers or scientific claims on the web page, are they referenced so you know they didn't make them up?  **Yes**  **No**
- c. Does the author of the web page reference himself or herself or his or her company to prove the claim?  **Yes**  **No**
- d. Is information from a reliable source (CDC, NIMH, NIH, a big university...)?  **Yes**  **No**

**If Yes list sources** \_\_\_\_\_

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**Do you feel this web page is authoritative?** No

**Why or why not?** It never says where the information comes from. For example, how do we know that "Our bodies are not designed to ingest and assimilate foods that have been irradiated...."?

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**3. Objectivity:**



- a. Is this page being used to sell something? **Yes**      **No**
- b. Is this page being used to make you believe a certain idea?      **Yes**  
**No**
- c. Does the author of this page use a lot of "I" statements instead of facts?      **Yes**      **No**

**Do you feel this web page is objective?** No  
**Why or why not?** It is trying to get you to buy something

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#### 4. Currency:

- a. When was the web page made? doesn't say
- b. When was it last updated? doesn't say
- c. Do the links work? yes

**Do you feel this web page is current?** don't know  
**Why or why not?** There are no dates on it

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**So do you feel this web page contains well-researched information? Why or why not?** No, because there are no sources cited so I don't know if what the page says is true. I don't know who the author is, and I can't tell when it was written. Also, they are trying to sell me a product so they are presenting information in a way that will make me want to send them money. This might not be the truth.

Student Name: \_\_\_\_\_

CATEGORY	4	3	2	1
Information about Autism	More than 10 facts about autism spectrum disorders.	6 to 9 facts about autism spectrum disorders.	3 to 5 facts about autism spectrum disorders.	1 or 2 facts about autism spectrum disorders.
Grammar/Spelling	1 or 2 small mistakes that do not take away from the presentation.	A few minor grammar and spelling mistakes but, the presentation is still understandable.	Some minor and major mistakes in grammar and spelling that interfere with your ability to understand the presentation.	Multiple major mistakes that make the presentation very difficult to understand.
Overall Appearance	Very neat and eye catching. Color and pictures used effectively.	Neat with good use of color and pictures.	Some use of color and words are readable.	Very little color and no pictures. Writing is very hard to read.
Creativity	Product is presented in a unique and memorable way.	Product is presented in a way that the message is easy to understand.	Product is presented in a way that the message is understandable with some work on the part of the audience.	Product is presented in a way that makes the message hard to understand.

Date Created: Jun 15, 2005 03:11 pm (CDT)