UNIT 9

# Boosting Brain Power through the Arts



"When I listen to Mozart, the numbers just seem to crunch themselves."

# 1 Focus on the Topic

### A PREDICTING

Look at the title of this unit. The *arts* refers to all the arts, including music, painting, sculpture, theater, dance, and so on. Look at the cartoon. *To crunch numbers* is a popular idiom meaning "to calculate." Why do you think listening to Mozart might make this man's job easier? Do you think this cartoon is funny? Why or why not?

### **SHARING INFORMATION**



- Some scientists have suggested that listening to classical music, particularly music composed by Mozart, may improve our ability to perform certain tasks. Listen to the excerpt from a piano sonata by Mozart, and discuss the following question.
  - What skills or abilities (for example, drawing pictures) may be helped by listening to such music?

Compare your ideas with those of a partner.

- Work in a small group, and discuss your answers to the following questions.
  - 1. Think back. Did you have music and art lessons in primary and secondary school? How often? How important were they in the overall school program? Did you like them? Why or why not?
  - 2. Outside of school, what other music or art training have you had?
  - 3. What role do music and art play in your life today?

### PREPARING TO LISTEN

### BACKGROUND

Scientists in many parts of the world are conducting experiments to explore the relationship between art and music, and intelligence. You are going to learn about three of these studies. Three important terms will be used in the descriptions of the studies:

- control group: a group studied in a scientific experiment; this group's behavior is not changed
- experimental group: another group studied in a scientific experiment; this group's behavior is changed and compared to the standard, the control group
- *spatial reasoning:* the ability to understand how things fit together in space and time (for example, putting together a puzzle)
- Work in groups of three.

Student A: Read about Experiment 1 on page 245.

Student B: Read about Experiment 2 on page 245.

Student C: Read about Experiment 3 on page 246.

On the chart, take notes about the experiment that you read about. Then describe the experiment to the other members of your group so that they can complete their charts.

		UNIVERSITY OF CALLEOPMIA DO YOU	UNIVERSITY OF
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- In your groups, discuss your answers to these questions:
  - 1. Which results were the most surprising? Interesting? Explain.
  - 2. In the University of California studies, the researchers chose the music of Mozart because it is complex, repetitive, and structured.
    - a. Do you agree with the choice of Mozart? Why?
    - b. What other composer or style of music could have been chosen? Why?
    - c. What kind of music would not fit these criteria? Why?

### VOCABL

ABULARY FOR COMPREHENSION
Work with a partner. Read the sentences below, and try to guess the meaning of the underlined expressions from the context. Write a synonym or definition on the lines.
1. A <u>well-rounded</u> education includes the study of many subjects, including music and art.
2. The students scored much higher on the statewide exams this year, indicating that their math <u>proficiency</u> had improved.
3. In most U.S. elementary schools, the <u>curriculum</u> includes math, science, language, social studies, physical education, art, and music.
4. The <u>building blocks</u> of a musical education include instruction in reading music, playing an instrument, and understanding music theory.
5. Children can develop <u>sequential</u> skills through activities such as counting and putting the events of a story in order.
6. To solve problems in their work, professionals depend on their <u>abstract</u> reasoning skills as well as their specific knowledge of the field.
7. Exposure to music and art in school and at home <u>enhances</u> one's enjoyment of the arts.

8.	8. A person with low <u>self-esteem</u> may be afraid to try new things or meet new people.				
9.	9. When the child did not walk at a normal age, her parents had her examined Doctors discovered a serious <u>neurological</u> disorder in the child's brain and spinal cord.				
10.	<ol> <li>Bright colors, vivid images, and thickly painted surfaces are the <u>hallmarks</u> of Van Gogh's paintings.</li> </ol>				
11.	11. Because of the child's learning difficulties, the teacher recommended intervention by a reading specialist.				
12.	12. Most psychologists <u>underscore</u> the importance of the role that parents have in teaching their children.				
sync	Working with a partner, match the words and expressions on the left with a definition or synonym on the right. Write the appropriate letter in the blank. Compare your answers with those of other students.				
	_ 1. abstract reasoning	a	· parts; pieces		
	2. building blocks	b	. related to nerves		
V <del>- 1111 - 11</del>	_ 3. curriculum	C.	self-confidence		
	4. enhance	d	. list of subjects taught		
	_ 5. hallmarks	e.	special activities to prevent bad results		
-	6. intervention		improve		
	7. neurological	g.	emphasize		
	8. proficiency	h.	in a particular order		
	9. self-esteem	i.	ability to understand general concepts		
	10. sequential	20	that cannot be immediately seen or felt		
-	11. underscore	j.	complete and varied		
	12. well-rounded		ability and skill		
		1.	outstanding features		

## cult our new things or met (exclussion)

# LISTENING ONE: Does Music Enhance Math Skills?

You will hear an interview from the radio news program All Things Considered, which airs on National Public Radio in the United States.



Working with a partner, brainstorm some answers to the question, "Why do you think music may enhance mathematical skills?" Make a brief list. Then listen to a short segment of the interview to check your answers.

### LISTENING FOR MAIN IDEAS



Read the questions. Then listen to Part One of the interview, and circle the letter of the correct answer to each question. Do the same for Part Two. Compare your results with those of another student.

#### Part One

- 1. According to a recent study, music and art education can \_\_\_
  - a. increase students' appreciation of nature
  - b. improve reading and math skills
  - c. improve math, but not reading skills
- 2. The purpose of the special arts program in Rhode Island was to \_\_\_\_\_
  - a. help students appreciate the arts
  - b. make students' education more well-rounded
  - c. investigate the impact of arts training
- 3. The special arts program in Rhode Island took advantage of children's natural inclination to master skills in \_\_\_\_\_.
  - a. sequencing
  - b. testing
  - c. building

<ul> <li>4. At the end of the test period, the researchers checked the children's</li> <li>a. attitude</li> <li>b. test scores</li> <li>c. attitude and test scores</li> </ul>	
Part Two	
<ul> <li>5. Children who benefit from arts training are those with</li> <li>a. involved parents</li> <li>b. artistic talent</li> <li>c. no special talent</li> </ul>	
<ul> <li>6. Scientists have made some guesses as to how music may enhance mathematical skills. One factor <i>not</i> mentioned is that arts training a. increases self-esteem</li> <li>b. relaxes nervous students</li> <li>c. teaches students how to learn new things</li> </ul>	
<ul> <li>7. Scientists and educators are now more aware that a rich learning environment can help children</li> <li>a. learn more</li> <li>b. become more artistic</li> </ul>	

### LISTENING FOR DETAILS

c. become more musical

Listen to the interview again. As you listen, fill in the chart on page 200 with the information about the two experiments described.

Doors I '		DART ONE 251 on to be	PARTTWO
Researcher's	s Name		
Experiment	Location		
Research Su (age/numbe	bjects er of subjects)		
Purpose of S	tudy		Impact of arts
Frequency of	Control Group	Standard curriculum music: x/month art: x/month	education on math ability
Classes	Experimental Group	Special arts classes —— x/week	
Style of	Control Group	music lessons were: [check (🗸) one] active passive	
Instruction	Experimental Group	arts program was: [check (✔) one] — active — passive	
Skills Taught:	Control Group	Check (✔) two items:  — went to concerts  — listened to concerts  — played music  — talked about music	
Art and Music	Experimental Group	Check ( / ) two items:  —— sang together  —— sang alone  —— drew portraits  —— drew shapes	
		1.	1.
Resu	Its	2.	2.
		3.	

### **REACTING TO THE LISTENING**

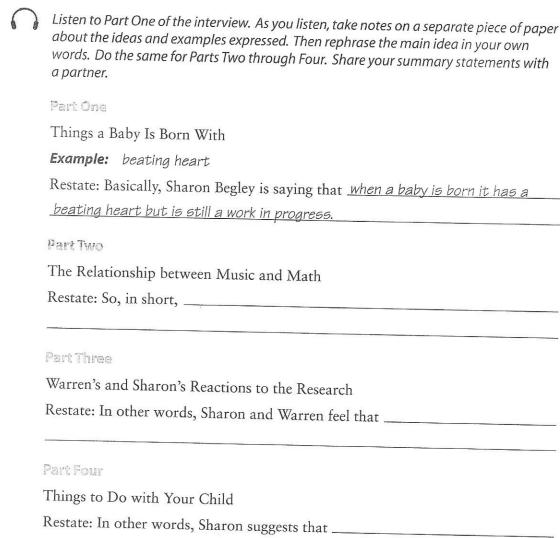
Work in a small group. Review the chart on page 200. Then listen to the excerpts about the two experiments. Based on these studies, make judgments as to how schools and parents might enhance children's brain power. For each excerpt, rank the items below in order of importance. Use the number 1 as the most important and 6 as the least important. Then discuss your judgments with those of the other groups.			
Excerpt One			
1. If school	ols want to apply the Rhode Island research, they should		
	a. offer more music and art classes than math classes in the curriculum		
	b. offer intensive music and art classes in kindergarten (age five)		
	c. organize art and music exhibitions		
	d. encourage parents to arrange for private music lessons		
	e. invite visiting artists and musicians to lecture to the children		
	f. have students write reports about famous musicians		
Excerpt Two			
2. If paren should	ts want to apply the results of Rauscher's research, they		
i	a. have pregnant mothers listen frequently to Mozart's music		
1	b. provide intensive music and art classes for children under age five		
	c. provide computer lessons along with music lessons		
	d. sing with their children		
6	e. give at-home tutorial math instruction		
	f. take their children to recitals, operas, and concerts		
2 In a small gro	up, discuss the answers to the following questions.		
1. What ne	w or surprising information did you find out from the interview		

- with Michelle Trudeau?
- 2. Besides art and music, what other "external" factors might boost intelligence? Games? Food? Explain.
- 3. In your opinion, in addition to increasing intelligence, how else might art and musical experiences help children?
- 4. The research results indicate the importance of arts education in schools. However, many U.S. schools emphasize reading and math much more than art and music. In your view, is arts education only a "frill"—a supplementary activity to be added only if there's time and money?

# LISTENING TWO: Music, Art, and the Brain

Listening One contains reports on scientific studies on school-age children. We learned that music has been shown to enhance mathematical and spatial ability, as well as analytical skills. Michelle Trudeau reported that something neurological may happen in the brain to create this connection.

Listening Two focuses on studies of babies. Here, David Alpern and Warren Levinson, hosts of the weekly radio broadcast, *Newsweek on Air*, interview Sharon Begley, *Newsweek* magazine's science editor, about the relationship between music and art, and the brains of very young children.



### **LINKING LISTENINGS ONE AND TWO**

Work in groups of three. Imagine you are advisers to a candidate running for governor. Education is a major issue. Some education leaders want to apply the new research linking music and intelligence. You want to use the new research to help get your candidate elected. Evaluate the proposals below, and choose one to use in the upcoming campaign.

- 1. Read and discuss the pros and cons of each proposal.\* Modify the proposals if necessary, or add one of your own. Use the information you learned so far in the unit.
- 2. In your groups, come to a consensus.
- 3. Present your proposal for the candidate to the class. Have one student from your group play the role of the candidate. He or she will discuss the proposals with you.

### Suggested Proposals

- Distribute free classical CDs to all families of newborns.
- Give out books about and music by Mozart to all families with children under the age of four years.
- Require 15 minutes of Mozart's music to be played prior to any standardized statewide examination.
- Offer free, once-a-week private piano or violin lessons for every two- or three-year-old child, for one year.
- Require all public preschools and day care centers (schools with children under the age of five) to play 30 minutes of classical music each day.

•	Your own idea:	

# 3 Focus on Vocabulary

Working with a partner, read the sentences on pages 204–205. Put an **L** next to the sentence if the underlined word is being used in a **literal** way, and put an **F** next to the sentence if it's being used in a **figurative** way. Then, using the context clues, explain what the word means in the sentence.

<sup>\*</sup> Some of these are actual ideas and have already been implemented.

1a. Early interventions might be having some effect in children knowing how to attack new material (Andrea Halpern, Listening One)
Explanation: Attack is used in a nonphysical way. The word creates
a picture in your mind. In this sentence, attack means "set to work
on" or "approach."
L b. The army <u>attacked</u> the opposing forces.
Explanation: Attack is used in a concrete, physical way. It means
"used violence against."
<b>2a.</b> After the performance, the audience gave the singer <u>a big hand.</u> Explanation:
b. The pianist's big hands allowed him to play the difficult chords in romantic music.
Explanation:
3a. The composer <u>orchestrated</u> his pieces for only string and brass instruments.
Explanation:
b. The museum director <u>orchestrated</u> the contract with intelligence, skill, and persistence. Her strategy was successful.
Explanation:
4a. The wiring in this lamp is so old it could start a fire.
Explanation:
<ul> <li>b. Warren Levinson said that the wiring for music and math is in the same part of the brain right next to each other.</li> <li>Explanation:</li> </ul>

### Work with another student.

Student A: Ask Student B questions 1 through 4.

Student B: Cover the left column. Answer Student A's questions. Respond in as much detail as possible, using the cues given and incorporating figurative language as much as possible. Then switch roles after question 4.

#### Student A

- 1. When was the last time you went to a concert or show and gave the performers a big hand? Describe the performance.
- 2. Have you ever <u>orchestrated</u> anything? A party? A meeting? A sports event? What did you have to do?
- 3. What is your strategy for <u>attacking</u> new material in English?
- 4. Were you interested in the fact that the wiring for both music and math is in the same area of the brain? Why?

#### Now switch roles.

- 5. Do you agree with Warren Levinson that it's a bit scary to find out that windows for learning close so early in life? Why?
- 6. Have you ever <u>blown</u> an important test, presentation, job interview, business deal, etc.? Describe what happened.
- 7. When was the last time you blew up at someone? What happened?
- 8. Very scary movies often frighten young children out of their wits. Do you think these experiences scar them for life? Why or why not?

### Student B

- 1. Hmm. Let me see, ...
- 2. Yes, I remember . . .
- 3. Well, one idea I have . . .
- 4. Yes, because . . .
- 5. Well, maybe ...
- 6. Of course. One time . . .
- 7. Hmm. I'm not sure I remember all the details, but . . .
- 8. Let me see . . .

83	Work with another student. Match the underlined words in the sentences with a similar expression from the list below. Write the corresponding letter in the blank.				
		<ol> <li>Scientists are <u>advancing</u> slowly toward an understanding of brain development in children.</li> </ol>			
		2. The students' intensive preparation in reading and vocabulary helps boost their test scores.			
		3. The university applied the new rules to the student body <u>as a whole</u> , not just to the first-year students.			
		4. After the accident, he fell behind in piano studies and never <u>caught</u> up to the level of the other children in his group.			
		5. Twentieth-century painting is <u>dramatically</u> different from that of earlier centuries.			
19 <u>0</u>		6. The parents of the young cellist want to buy the best instrument available, <u>regardless</u> of the price.			
-		7. A sculptor's <u>works in progress</u> often reveal more about the creative process than the finished sculpture does.			
-		8. Playing piano did more for the young woman's self-esteem than getting good grades in school.			
8 ===		9. The student insisted that the wrong notes <u>had nothing to do with</u> lack of practice. The piece had sounded much better at home.			
		a. benefited			
		<b>b.</b> didn't involve			
		c. entirely			
		d. increase			
		e. progressing			
		f. reached			
		g. unfinished products			
		h. very; noticeably			
		i. without considering			

Divide the class into several teams of two to four players. All teams will play the game described below.

### WORD GAME: CLEAN THE BOARD

Object of the Game: To be the first team to "clean the board," or remove all cards from the large piece of paper, the "game board."

### How to Play the Game

- 1. Each team copies the game board onto a larger piece of paper. It should be two columns and three rows as shown in the picture on the left below.
- 2. Each team chooses six words from the list below and places them face up. Write each word on a small card, and place each card over a different box on the game board. Each team may choose different words.

a big hand attack blow blow up boost catch up to	curriculum do more for enhanced have to do with orchestra proficiency	self-esteem sequential well-rounded windows work in progress
-----------------------------------------------------------------	-----------------------------------------------------------------------	--------------------------------------------------------------------------

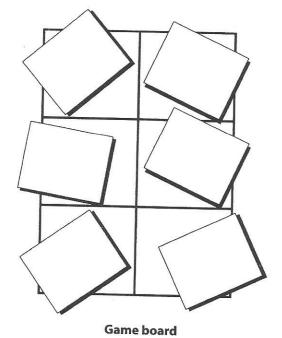
3. All teams play at the same time, competing against one another. One student on each team asks the teammate(s) a question that elicits one of the words on the board. In other words, the student tries to get his teammate(s) to answer his question using one of the words on the board. The teammate(s) listen to the question and then answer it. If the teammate(s) choose the correct word to answer the question, they remove the card from the board.

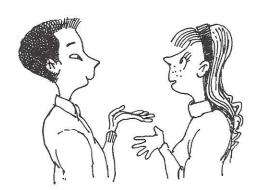
### Example

Teammate One: "How do you feel about winning the math contest?" (Teammate One is thinking of the word boosted and wants one of his teammates to answer the question using that word.)

Teammate Two: "Great! It boosted my self-confidence."

The correct word, boosted, was chosen, so Teammate One removes the word from the board.





- 4. The winning team is the one that cleans the board (removes all its cards) first.
- 5. Play again and start over, using different words from the list.

# 4 Focus on Speaking

# PRONUNCIATION: Joining Final Consonants

Words that end in final consonants join to following words in different ways.

 When the next word starts with a vowel: Join the final consonant and vowel clearly.

Self-esteem

works in progress

• When the next word starts with the same consonant or sound: Hold one long consonant (" "). Do not say the consonant twice.

Art teachers

enhance skills

 When the next word starts with a different consonant: Keep the final consonant short. Hold it (") "), and then immediately say the next word.

Crunch<sup>)</sup>numbers

attack) problems



Listen, and repeat the phrases. Then practice saying them with a partner. Pay attention to how you join the two words together.

- 1. music appreciation
- 2. art education
- 3. critical ingredients
- 4. parental involvement
- 5. music class
- 6. top performance
- 7. math theories
- 8. abstract topics
- 9. math proficiency
- 10. reap benefits
- 11. research findings
- 12. geometric shapes

$\cap$	or or it their complete	isten, and repeat the phrases. Using the rules for joining consonants, mark each phrase:  or  or  or  or  or  or  or  or  or  or			
	standard curriculum a critical ingredient art classes	boost brain power research challenge typical lesson	an interactive approach logical thinking self-esteem		
	1. In most music classes a really the	around the country, listeni	ng to tapes or a lecture is		
	2. The researchers found self-image and	that music has a general e	effect of improving a child's		
3. Just how and why music and art enhance certain mathematical skills continues to be a					
	4. Some classes got the sp		ers received the		
	5. The children learned to	draw shapes and deal wit	th colors and forms in the		
	<ol><li>Arts education seems to analytical reasoning.</li></ol>	be	in improving		
7. Studies done in the past seven years indicate that studying music and ar significantly					
	8. Communication, discuss	sion, and involvement are to education.	hallmarks of		
	9. Neuroscientists believe to requiring spatial reasoning	he brain works similarly v	when people perform tasks		
<b>GRAMMA</b>	R: The Passive Voice and th				

Working with a partner, examine the sentences on page 211, and discuss the questions that follow.

- In one study, a group of three-year-olds <u>was given</u> singing lessons while another group <u>was given</u> piano lessons.
- A lot of the brain research has been done on animals.
- A mistake <u>was made</u> in the printed program. The sonatas by Mozart <u>will</u> <u>not be played</u>.
- Before the concert, we had the piano tuned and got the lights repaired.
- 1. In each sentence, why do you think the speaker is choosing the passive voice for the verbs?
- 2. In the fourth sentence, who is performing the action?

# The Passive Voice and the Passive Causative

### How to Form the Passive Voice

The **passive voice** is formed by using a form of the verb **to be** plus the past participle of the main verb. The verb to be can be used in any tense, as illustrated below.

intelligence, izaquently the artiformio and lessons on young					
revial Subject	Verto To Be	Participle	Complement		
The students	are	given	a well-rounded education.		
His self-esteem	was	enhanced	by the new arts curriculum.		
Intervention	will be	needed	if things don't improve.		
The curriculum	is going to be	improved.			
The pieces	must be	practiced	before the performance.		
The neurons	might have been	stimulated.			
Spatial reasoning	is being	improved.			

### When to Use the Passive Voice

The passive voice is used when you:

- want to emphasize the object of the action, not the actor
- · do not know the actor
- want to avoid mentioning who performed the action or to avoid blaming anyone
- · want to report an idea or fact

(continued)

### **Passive Causative**

The passive causative is used to speak about services arranged.

It is formed by the verbs **get** or **have** and the past participle of the main verb.

- Mrs. Diaz is organizing an art exhibition of her students' work. With special funds
  collected for this purpose, she <u>had</u> the paintings <u>mounted</u> on special paper. She
  also <u>had</u> the works <u>framed</u>. Finally, she <u>got</u> the school lobby <u>cleaned</u> and <u>set up</u>.
- Complete the paragraphs with the appropriate forms of the verbs provided. Choose active or passive forms, including passive causative. Keep in mind that some verbs cannot be used in the passive voice.

# Piano or Computer: Which Boosts Intelligence?

There is exciting new research about the effects of musical training on
intelligence. Currently the effects of piano lessons on young children
by Frances Rauscher of the University of Wisconsin.
Whether children can learn more from a piano keyboard or a computer
keyboard Last week, a report on this research
3. (appear) in the journal Neurological Research. It said that
certain aspects of a child's intelligenceby musical training particularly have in a second of the control of the contr
training, particularly by piano study. Spatial reasoning skills
5. (can/improve) by work on a piano keyboard, but not on a computer keyboard.
In one of Rauscher's recent studies, 78 young children
6. (involve) 7. (divide) rinto four groups of subjects. Some of the children piano keyboard lessons, some computer lessons, and others group singing lessons. No special training
9. (provide) for the fourth group. By the end of six months, the
piano keyboard children instruction in muscle
that the sample compositions, and musical literacy. Rauscher claimed that
the children enough training to be able to play simple
pieces, like Beethoven's "Ode to Joy."

The final step in the research of a test of
analytical reasoning skills. With the help of research assistants, Rauscher
the results Then she
the data using a highly 14. (analyze)
sophisticated computer program. An important finding
The children who in piano keyboard training scored
significantly higher on the test than the children in the other three groups.
Therefore, Rauscher that, regardless of the fact that a
keyboard for the computer group, the piano keyboard
children still higher on the test.
The research underscores the fact that the piano
to be the critical ingredient. In musical training, the brain circuits
in such a way that certain nerve pathways
22. (strengthen) to be
when spatial reasoning tasks
25. (perform) Nevertheless, in order to confirm these results,
Rauscher by
other researchers.

For this activity on page 214, work with a partner.

Student A: You are a reporter for Music Times Newsletter. You are writing a story about a child who displayed extraordinary talent at a very young age. The prodigy is Tanya Chang, a thirteen-year-old violinist who could play works by classical composers at the age of four. You are interviewing Tanya's mother. Cover the right column. Read the questions in the left column. Change the underlined verbs to the passive voice as you read.

Student B: You are Mrs. Chang, Tanya's mother. You have dedicated your life to supporting your daughter's musical career. Cover the left column. Read the responses in the right column. Change the underlined verbs to the passive voice as you read.

Listen carefully, look at each other as much as possible, and read your lines with feeling.

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The underlined phrases are common expressions used to make transitions of similarity and contrast that link sentences and ideas. When we speak, it's important to use these transitions to show how ideas are similar or different.

Similarity	Contrast		
Likewise,	In contrast,		
Similarly,	However,		
is similar to in that	is different fromin that		

Working with a partner, examine the chart summarizing four studies. Make statements about the information under each heading. Compare and contrast the experiments using the transitional expressions above. Share your responses with each other.

**Example:** The University of California, Irvine study **is similar to** the Harvard study **in that** it was conducted over a period of eight months.

对三个公司 医乳化剂 医水油酸	sti gniqoleveb i RESEARCHER'S rti nNAMES cu CEMANN th	AD RESEARCE OF	THEFTENGTHON	SIN PHARMASIE	RESULTS OF STUDY
#1 Switzerland Austria	Maria Spychiger and Jean-Luc Patry	7 to 15 years old 3 years old	3 years	Effect of music on math and language ability	Math and language skills improved
#2 University of California, Irvine, USA	Frances Rauscher and Gordon Shaw		8 months	Effect of music (singing and piano) on intelligence	Abstract and spatial reasoning skills improved
#3 Providence, Rhode Island, USA	Martin Gardiner	6 to 7 years old	7 months	Effect of arts education (music and art) on math and language ability	Math and language skills improved
#4 Harvard University, Cambridge, Massachusetts, JSA	Christopher Chabris	18 to 22 years old	8 months	Effect of Mozart's music on intelligence	Spatial reasoning skills did not significantly improve

### SPEAKING TOPIC

Read the background information and case study based on a real news report. Then do the activity that follows. You will be planning and conducting a meeting.

### **BACKGROUND**

In the United States, public schools are administered and financed by local governments. Each local district has a school board, a group of citizens who are elected by the voting residents of the town. One of its most significant responsibilities is to determine the local school budget, the yearly financial plan of how the school district will spend money allocated for the local school.

Money to support public school education comes from a variety of sources: local taxpayers, state governments, and the federal government. In recent years, many public schools have had to deal with smaller and smaller budgets. The cost of services is rising, and the state and federal governments are contributing less financial support. Therefore, many districts are struggling to maintain a high-quality educational program.

# Case Study: School Board Proposes Drastic Cuts in Arts Program

One school district in Illinois is in the process of developing its yearly budget. However, this year the district must work with 30 percent less money than it has had in the past. The state of Illinois has severely cut back on the amount of money it usually gives to the local districts. In order to save money, the local school board has already decided on a number of actions:

- forced early retirement for 17 teachers
- elimination of physical education classes in the middle school and high school
- elimination of foreign language instruction in the elementary school (kindergarten through sixth grade)

However, now the board is saying that these cuts are not enough. Now they have proposed to eliminate all art and music classes from the elementary school curriculum. Parents are outraged. Angry discussion can be heard everywhere throughout the town: on downtown streets, in supermarkets, at the YMCA and soccer fields, and so on. Parents are demanding that the board reconsider its decision.

Because of all the complaints, the board has agreed to hold open forum meetings to discuss the proposal. It has invited representatives from three groups to attend the meetings: (1) parents, (2) art and music teachers, and (3) school board members.

### PREPARING FOR THE MEETING

Everyone in the class should choose a role: parent, teacher, or school board member. Divide into groups of students all playing the same role. In your role groups, study the descriptions that follow, and brainstorm other supporting arguments. Write your arguments on separate pieces of paper.

#### **Parents**

- want to keep art and music classes in the school curriculum
- do not wish to pay extra to provide private art or music lessons
- feel art and music instruction inspires appreciation of the arts and provides a break from academic instruction

### Art and Music Educators

- believe in the research findings from California and Rhode Island
- feel that it's important for children to have many ways to express themselves
- feel that arts instruction can improve perceptual skills and motor coordination

### School Board Members

- feel that art and music instruction is a frill, a non-academic extra
- feel the arts do not have the rigor or importance of math, science, or reading
- think parents should be responsible for this instruction

### CONDUCTING THE MEETING

- 1. One student leads the meeting. This leader:
  - opens the meeting by introducing the participants and explaining the purpose
  - conducts the meeting by eliciting comments and questions from the participants
  - closes the meeting by summarizing the main arguments
- 2. During the meeting, all students should use the passive voice and expressions of similarity and contrast whenever appropriate.

### SUMMARIZING THE ISSUE

Write an editorial letter to the local newspaper voicing your concerns about the cuts to the arts education program. Emphasize the important role that art and music play in the lives of all children.

### **RESEARCH TOPIC**

You will organize an experiment on "The Mozart Effect." The experiment will try to determine if listening to music by Mozart can increase the speed of performing simple math, logic, or spatial problems.

### PREPARING FOR THE EXPERIMENT

- 1. Choose four to six people to participate, or divide the class into two groups.
- 2. Divide the participants into two groups: Group A: control group, and Group B: test group.
- 3. Explain to the participants the purpose of the experiment, and give a little background that you have learned in this unit. Then present the experiment

Group A will sit in silence for 10 minutes. Group B will listen to 10 minutes of music by Mozart (you can use the music from the beginning of the unit). After 10 minutes, you will all be given problems to do. \* Do them as quickly and as accurately as possible. Work alone. You will do three problems.

### Conducting the Experiment

- 1. Participant groups go into two rooms. Group A sits in silence. Group B listens to Mozart. After 10 minutes, all participants do the problems.
- 2. Compare the two groups' problem-solving skills in terms of speed and

### Reporting the Results

- 1. Report the results to the class. Compare the results. Use the expressions of contrast and similarity and the passive voice to explain the process.
- 2. Work in small groups, and discuss the answers to these questions:
  - Did you see evidence of the Mozart effect? Why or why not?
  - If you were to repeat the experiment, how would you do the experiment



For Unit 9 Internet activities, visit the NorthStar Companion Website at http://www.longman.com/northstar.

Use the sample problems on page 245, or find or design your own.