Robots in School: Giant Leap or Slippery Slope?

Developed by Roberta Ching

Reading Selections for this Project

Carey, Benedict, and John Markoff. "Students, Meet Your New Teacher, Mr. Robot." *New York Times* 10 July 2010: A1. Print.

"Will Small Step for Robots Lead to Giant Leap for Robotkind?" Interview by Miles O'Brien. *PBS.org.* MacNeil/Lehrer Productions, 29 Oct. 2010. Web. 17 Dec. 2012. <http://www.pbs.org/newshour/bb/science/july-dec10/robots_10-29.html>.

O'Brien, Miles. "Will Small Step for Robots Lead to Giant Leap for Robotkind?" *PBS.org. PBS NewsHour* 29 Oct. 2010. (Video Interview Transcript)

Week 1: Activities 1-7

Week 2: Activities 8-16

Week 3: Activities 17-22

Reading Rhetorically

Prereading

Activity 1: Getting Ready to Read—Quickwrite

Imagine that you can design your own personal robot. What would your robot look like, and what would it be able to do? (If you wish, you may draw a picture of your robot to go with your description.)

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Partner's Response: _____

_____

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_____

Activity 2: Exploring Key Concepts (Video)

Watch the 9-minute video "Will Small Step for Robots Lead to a Giant Step for Robotkind?" You can find this video online at: http://www.pbs.org/newshour/bb/science-july-dec10-robots_10-29/

When you have finished watching the video "Will Small Step for Robots Lead to a Giant Step for Robotkind?" exchange your quickwrite with a partner (if available). Keeping in mind the robots you saw in the video and other robots that you have seen or heard about, write a response to what your partner wrote. Ask questions about your partner's robot, or suggest additional ideas for how to design a robot that will be most helpful to your partner. When you have both finished, share responses with the whole group.

Activity 3: Surveying the Text, Making Predictions and Asking Questions (Video Transcript)

1. The title of the video is the question "Will Small Step for Robots Lead to a Giant Step for Robotkind?" When Neil Armstrong landed on the moon, he said, "That's one small step for [a] man, one giant leap for mankind." What do you think it means to talk about the small step and the giant step for "robotkind"? What is the reason for comparing it to the landing of people on the moon?

2. What do you think is the purpose of the video?

3. The video was shown on *PBS NewsHour* on October 29, 2010. How accurate and up-to-date do you think the information is?

Reading

Activity 4: First Reading (Video Transcript)

Before you read, identify the answers to these questions:
1. What is a transcript?

2. What are the names in bold?

Read the video transcript once through. Then answer the following questions.

3. What is Judy Woodruff's role? What question does she ask to begin the discussion?

4. Now that you have read the transcript, how would you answer Woodruff's question?

Activity 5: Understanding Key Vocabulary (Video Transcript)

Choose the word that best fills in the blank in the sentences below from the list of key words. Look back at the transcript to see how the word is used. The number in parentheses is the location of the word in the transcript.

Key words: capabilities (3), spinoffs (5), excel (10), paradox (14), empathetic (29), dehumanize (35), diminish (38), dexterity (40)

1. It is a ___*paradox*___ that slow and steady wins the race.

2. Military research has resulted in many _____, including the World Wide Web.

3. With a thumb and four fingers on each hand, human beings have amazing _____.

4. I wouldn't want to _____ his achievements, but many other people have achieved as much.

5. She is a wonderful person because she is not only generous but also ____.

6. We shouldn't underestimate the _____ of machines.

7. With hard work and practice, I hope to _____ at soccer.

8. Depending too much on computers can _____ us.

Activity 6: Reading for Understanding (Video Transcript)

Now read the transcript again, and underline the parts that help to answer these questions:
What can robots do as well or better than humans? What can't they do?

In the margin, label the things they can do with a plus (+) and the things they can't do with a minus (-). Based on your annotations, fill in this chart with as many examples from the text as you can find:

Things robots do well	Things humans do better
Repeated motion: assembly lines, disarming bombs, helping the disabled, vacuuming	*Varied motion: folding towels*

Postreading

Activity 7: Thinking Critically (Video)

Watch the video again if possible. Then answer the following discussion questions. If you are able, engage in a live discussion of these questions with others working on the same project.

1. Why is it hard for robots to learn to do easy things like walking and folding towels?

2. What does "human-like" mean when we are talking about a machine? How human-like should we make robots?

3. Is Sherry Turkle right that humans are "toast" if we build machines that have expressions and use body language? Or is Cynthia Breazeal right when she says that people will always be able to distinguish between a robot and a person? Should we be worried?

4. Does the video convince you that "robots have become real"? In what way?

Prereading

Activity 8: Making Predictions and Asking Questions (Video and Article)

Write answers to the following questions about the article that you will read next:

1. What is surprising about the title "Students, Meet Your New Teacher, Mr. Robot"? What would be the difference if the title were simply "Students, Meet Your New Teacher"?

2. How would you feel if one of your teachers were a robot? What do you think the robot teacher could teach you?

3. What differences do you expect to find between the newspaper article and the story about robots from a news program on TV?

4. What arguments about using robots to teach children do you think you will find in Carey and Markoff's article? Will they be the same or different than the arguments in the news show?

5. How will Carey and Markoff try to persuade their readers that their claim about robots as teachers is right? Will it be easier or harder without the video?

Reading

Activity 9: Noticing Language (Article)

Read the following sentences from Carey and Markoff's "Students, Meet Your New Teacher, Mr. Robot" and notice how the word in bold in used is the sentence. Fill in the blanks in the box for each of the words. Then complete the sentence below the box:

1. In a handful of laboratories around the world, computer scientists are developing robots like this one: highly programmed machines that can **engage** people (7).

Word	Part of Speech	Meaning
engage		involve
engaging	*verbal adjective*	
	noun	involvement

The robot was designed to be engaging with _____

_____ .

2. "The great hope for robots," said Patricia Kuhl, co-director of the Institute for Learning and Brain Sciences at the University of Washington, "is that with the right kind of technology at a critical period in a child's development, they could **supplement** learning in the classroom" (13).

Word	Part of Speech	Meaning
supplement	*verb*	
supplemental		
	noun	something that is added to something to improve it

Robots may be a way to provide supplemental _____

_____ .

3. A field called "affective computing" is helping scientists discover exactly which features of a robot make it most **convincingly** "real" as a social partner, a helper, a teacher (29).

Word	Part of Speech	Meaning
	noun	belief or opinion
convince		
convincingly		act in a way that makes someone believe that something is true

Turkle's argument convinced me because _____

_____ .

4. "The machine's **behavior** is what matters," Dr. Sejnowski said. (31).

Word	Part of Speech	Meaning
behavior	*noun*	
	verb	act
behavioral		related to behavior

Robots with social behavior can _____

_____ .

5. "The child begins to notice something in that synchronous behavior and opens up," said Marek Michalowski of Carnegie Mellon University, who **collaborated** on the studies (35).

Word	Part of Speech	Meaning
collaboration	*noun*	
collaborate		work together
	adjective	

Researchers often collaborate _____

_____ .

6. "Social interactions are so dependent on whether someone is in sync with you," Dr. Bhat said. "You walk fast, they walk fast; you go slowly, they go slowly—and soon you are **interacting**, and maybe you are learning" (38).

Word	Part of Speech	Meaning
interacting		
	noun	
interact	*verb*	
interactive	*adjective*	involving communication between people or things

Interactions with robots _____

_____ .

Activity 10: Reading for Understanding (Article)

Read "Students, Meet Your New Teacher, Mr. Robot." As you read, think about the predictions you made and what you learned from watching the video.

Answer the following questions:

1. How accurate were your predictions? Did you have to modify some of your predictions? If you made a prediction that turned out to be wrong, was it because you misunderstood or failed to notice something? Was it because you didn't have enough information? Or was it because the writer intentionally misled you as a rhetorical strategy?

2. When you read the whole article, did anything surprise you?

3. Are there any parts of the article that you found confusing?

Activity 11: Re-reading the Article

Now read the article again, and underline the parts that help to answer these questions: What can robots do as well or better than humans? What can't they do?
- In the margin, label the things they can do with a plus (+).
- Label the things they can't do with a minus (-).

Based on your annotations, continue to fill in the chart.

Things robots do well (Video)	Things humans do better (Video)
Repeated motion: assembly lines, disarming bombs, helping the disabled, vacuuming	*Varied motion: folding towels*

Things robots do well (Article)	Things humans do better (Article)

Activity 12: Considering the Structure of the Text (Article)

It's time to study the text intensively. In each box in the text, state the content of that part of the text (a summary of the main idea) and the authors' purpose (why?) for that content. At the end, state the main idea of the entire article and the authors' purpose.

Students, Meet Your New Teacher, Mr. Robot

By Carey Benedict and John Markoff
New York Times, July 10, 2010

1. The boy, a dark-haired 6-year-old, is playing with a new companion.

2. The two hit it off quickly—unusual for the 6-year-old, who has autism—and the boy is imitating his playmate's every move, now nodding his head, now raising his arms.

3. "Like Simon Says," says the autistic boy's mother, seated next to him on the floor.

4. Yet soon he begins to withdraw; in a video of the session, he covers his ears and slumps against the wall.

5. But the companion, a three-foot-tall robot being tested at the University of Southern California, maintains eye contact and performs another move, raising one arm up high.

6. Up goes the boy's arm—and now he is smiling at the machine.

7. In a handful of laboratories around the world, computer scientists are developing robots like this one: highly programmed machines that can engage people and teach them simple skills, including household tasks, vocabulary or, as in the case of the boy, playing, elementary imitation and taking turns.

Content and Purpose:

8. So far, the teaching has been very basic, delivered mostly in experimental settings, and the robots are still works in progress, a hackers' gallery of moving parts that, like mechanical savants, each do some things well at the expense of others.

9. Yet the most advanced models are fully autonomous, guided by artificial intelligence software like motion tracking and speech recognition, which can make them just engaging enough to rival humans at some teaching tasks.

10. Researchers say the pace of innovation is such that these machines should begin to learn as they teach, becoming the sort of infinitely patient, highly informed instructors that would be effective in subjects like foreign language or in repetitive therapies used to treat developmental problems like autism.

> **Content and Purpose:**

11. Several countries have been testing teaching machines in classrooms. South Korea, known for its enthusiasm for technology, is "hiring" hundreds of robots as teacher aides and classroom playmates and is experimenting with robots that would teach English.

12. Already, these advances have stirred dystopian visions, along with the sort of ethical debate usually confined to science fiction. "I worry that if kids grow up being taught by robots and viewing technology as the instructor," said Mitchel Resnick, head of the Lifelong Kindergarten group at the Media Laboratory at the Massachusetts Institute of Technology, "they will see it as the master."

13. Most computer scientists reply that they have neither the intention, nor the ability, to replace human teachers. The great hope for robots, said Patricia Kuhl, co-director of the Institute for Learning and Brain Sciences at the University of Washington, "is that with the right kind of technology at a critical period in a child's development, they could supplement learning in the classroom."

> **Content and Purpose:**

Lessons From RUBI

14. "Kenka," says a childlike voice. "Ken-ka."

15. Standing on a polka-dot carpet at a preschool on the campus of the University of California, San Diego, a robot named RUBI is teaching Finnish to a 3-year-old boy.

16. RUBI looks like a desktop computer come to life: its screen-torso, mounted on a pair of shoes, sprouts mechanical arms and a lunchbox-size head, fitted with video cameras, a microphone and voice capability. RUBI wears a bandanna around its neck and a fixed happy-face smile below a pair of large, plastic eyes.

The developers of RUBI, a social robot that currently teaches kids at the UCSD Early Childhood Education Center, are involved in the new research center.

17. It picks up a white sneaker and says "kenka," the Finnish word for shoe, before returning it to the floor. "Feel it; I'm a "kenka."

18. In a video of this exchange, the boy picks up the sneaker, says "kenka, kenka"—and holds up the shoe for the robot to see.

19. In person they are not remotely human-like, as most of today's social robots. Some speak well, others not at all. Some move on two legs, others on wheels. Many look like escapees from the Island of Misfit Toys.

20. They make for very curious company. The University of Southern California robotused with autistic children tracks a person throughout a room, approaching indirectly and pulling up just short of personal space, like a cautious child hoping to join a playground game.

21. Like any new kid in class, RUBI took some time to find a niche. Children swarmed the robot when it first joined the classroom: instant popularity. But by the end of the day, a couple of boys had yanked off its arms.

22. The RUBI team hit upon a solution one part mechanical and two parts psychological. The engineers programmed RUBI to cry when its arms were pulled. Its young playmates quickly backed off at the sound.

23. If the sobbing continued, the children usually shifted gears and came forward—to deliver a hug.

24. Re-armed and newly sensitive, RUBI was ready to test as a teacher. In a paper published last year, researchers from the University of California, San Diego, the Massachusetts Institute of Technology, and the University of Joensuu in Finland found that the robot significantly improved the vocabulary of nine toddlers.

> **Content and Purpose:**

Making the Connection

25. In a lab at the University of Washington, Morphy, a pint-size robot, catches the eye of an infant girl and turns to look at a toy.

26. No luck; the girl does not follow its gaze, as she would a human's.

27. In a video the researchers made of the experiment, the girl next sees the robot "waving" to an adult. Now she's interested; the sight of the machine interacting registers it as a social being in the young brain. She begins to track what the robot is looking at, to the right, the left, down. The machine has elicited what scientists call gaze-following, an essential first step of social exchange.

28. "Before they have language, infants pay attention to what I call informational hotspots," where their mother or father is looking, said Andrew N. Meltzoff, a psychologist who is co-director of the university's Institute for Learning and Brain Sciences. "This," he said, "is how learning begins."

29. This basic finding, to be published later this year, is one of dozens from a field called "affective computing" that is helping scientists discover exactly which features of a robot make it most convincingly "real" as a social partner, a helper, a teacher.

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Content and Purpose:



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30. "It turns out that making a robot more closely resemble a human doesn't get you better social interactions," said Terrence J. Sejnowski, a neuroscientist, at University of California, San Diego. The more human-like machines look, the more creepy they can seem.

31. "The machine's behavior is what matters," Dr. Sejnowski said. And very subtle elements can make a big difference.

32. The timing of a robot's responses is one. The San Diego researchers found that if RUBI reacted to a child's expression or comment too fast, it threw off the interaction; the same happened if the response was too slow. But if the robot reacted within about a second and a half, child and machine were smoothly in sync.

33. Physical rhythm is crucial. In recent experiments at a day care center in Japan, researchers have shown that having a robot simply bob or shake at the same rhythm a child is rocking or moving can quickly engage even very fearful children with autism.

34. "The child begins to notice something in that synchronous behavior and open up," said

Marek Michalowski of Carnegie Mellon University, who collaborated on the studies. "Once that happens," he said, "you can piggyback social behaviors onto the interaction, like eye contact, joint attention, turn taking, things these kids have trouble with."

Content and Purpose:

35. One way to begin this process is to have a child mimic the physical movements of a robot and vice versa. In a continuing study financed by the National Institutes of Health, scientists at the University of Connecticut are conducting therapy sessions for children with autism using a French robot called Nao, a two- foot humanoid that looks like an elegant Transformer toy. The robot, remotely controlled by a therapist, demonstrates martial arts kicks and chops and urges the child to follow suit; then it encourages the child to lead.

36. "I just love robots, and I know this is therapy, but I don't know—I think it's just fun," said Sam, an 8-year-old from New Haven with Asperger's syndrome, who recently engaged in the therapy.

37. "This simple mimicry seems to build a kind of trust, and increase sociability," said Anjana Bhat, an assistant professor in the department of education who is directing the experiment. "Social interactions are so dependent on whether someone is in sync with you," Dr. Bhat said. "You walk fast, they walk fast; you go slowly, they go slowly—and soon you are interacting, and maybe you are learning."

38. Personality matters, too, on both sides. In their studies with Asimo, the Honda robot, researchers have found that when the robot teacher is "cooperative" ("I am going to put the water glass here; do you think you can help me by placing the water glass on the same place on your side?"), children 4 to 6 did much better than when Asimo lectured them, or allowed them to direct themselves ("place the cup and saucer anywhere you like"). The teaching approach made less difference with students ages 7 to 10.

39. "The fact is that children's reactions to a robot may vary widely, by age and by individual," said Sandra Okita, a Columbia University researcher and co-author of the study.

40. If robots are to be truly effective guides, in short, they will have to do what any good teacher does: learn from students when a lesson is taking hold and when it is falling flat.

41. The researchers are shooting for nothing less than capturing the foundation of human learning—or, at least, its artificial intelligence equivalent. If robots can learn to learn, on their own and without instruction, they can in principle make the kind of teachers that are responsive to the needs of a class, even an individual child.

42. Parents and educators would certainly have questions about robots' effectiveness as teachers, as well as ethical concerns about potential harm they might do. But if social

robots take off in the way other computing technologies have, parents may have more pointed ones: Does this robot really "get" my child? Is its teaching style right for my son's needs, my daughter's talents?

43. That is, the very questions they would ask about any teacher.

Content and Purpose:

Content and Purpose of Article:

Choe Sang-Hun contributed reporting from Seoul.

Activity 13: Quickwrite

Now respond to the following question:

Quickwrite: Would you want to spend time around social robots? Explain why or why not.

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_____

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_____

_____

When you have finished writing, exchange responses with a partner, if possible. Write a response to what your partner wrote. You may agree or disagree, ask a question, or suggest additional ideas.

Activity 14: Analyzing Stylistic Choices (Video Transcript)

The speakers in the video use informal spoken language, including slang and sentence fragments (incomplete sentences). In academic and business writing, writers use more formal language to communicate the same ideas. Read the sentences below from the video transcript, and "translate" what the speaker is saying into the more formal language that the person might use if he or she were writing for a newspaper such as *The New York Times*. You may need to substitute a more formal word or phrase, rewrite a sentence fragment to make a complete sentence, or add specific detail.

Note that writers may occasionally use informality even in formal, academic writing to make their writing livelier.

1. Who says you need to be human to have the right stuff?

   More formal*:   Who claims that only humans have the best capabilities?*   (example)

2. The idea, eventually, astronauts will use Robonaut as an assistant on space walks.

   More formal: _____

   _____

3. You know, a robot servant to do my bidding, my dirty work.

   More formal: _____

4. I'm going to outfold this robot, darn it.

   More formal: _____

5. Marvin Minksky helped create a field we call artificial intelligence, you know, making computers think like us.

   More formal: _____

   _____

6. But, to get to the point, well, let's just say it's been a long, slow, stroll.

   More formal: _____

   _____

7. So things like when I finish speaking and I look at you, that's a very explicit prompt that now I'm expecting you to respond.

   More formal: _____

   _____

8. She says humanoid robots are leading us down a slippery slope.

   More formal: _____

   _____

9. The moment you make a robot in human form, and the moment it can make eye contact, track your motion, and gesture toward you, you're kind of toast.

   More formal: _____

   _____

10. I think people are very savvy.

    More formal: _____

Postreading

Activity 15: Thinking Critically—Student-led Discussion

Look back at your annotated copies of the video transcript of "Will Small Step for Robots Lead to Giant Leap for Robotkind?" and the article, "Students, Meet Your New Teacher, Mr. Robot" (Activities 6 & 12). Write three discussion questions that you would like to discuss with another person working on this project. These questions should be about significant issues that the two texts raise, and should not have a right or wrong answer. **Example:** Is Sherry Turkle right that developing robots in human form means we humans are toast? Explain why or why not.

1.

2.

3.

If possible, get into groups of 3-4 students for a discussion period. In your group, select a discussion leader. His/her responsibility is to select questions and to call on people to talk and to make sure that everyone in your group participates in the discussion. They are not responsible for knowing the right answer.

During the discussion, your teacher will listen to students and then give you feedback on how well your group used academic language and collaborated on answering the questions.

Activity 16: Reflecting on Your Reading Process

1. What have you learned about how experts argue from watching the video and reading the article about robots? What do you want to learn next?

2. In what ways has your ability to read texts and view media improved? What will you be able to apply in other classes?

Connecting Reading to Writing

Discovering What You Think

Activity 17: Robots in School Writing Assignment

PROMPT

Using Carey and Markoff's article, "Students, Meet Your New Teacher, Mr. Robot," and the video, "Will Small Step for Robots Lead to Giant Leap for Robotkind?" in addition to your own observations and experiences, write a letter to the principal of your school. In the memo, make an argument for whether or not your school should be part of an experiment to find out if social robots should be used to supplement the instruction provided by your teachers (and/or parents) in middle school. Refer to both the video and the article for evidence to support your position.

Activity 18: Taking a Stance and Gathering Evidence

As you get ready to write the letter to your principal, gather the writing that you have already done on the topic of robots including your quickwrites (Activities 1 &13) and the graphic organizer of the things that robots do well and the things that humans do better (Activity 11). After you've reviewed what you've already written, answer the following questions:

1. In one or two sentences, explain whether you think social robots could be helpful in classrooms in your school?

_____

_____

_____

_____

2. In the video and the article, who would agree with your position? Explain your answer.

_____

_____

_____

_____

3. Who would disagree? What would he or she disagree with?

_____

_____

_____

_____

_____

4. What evidence best supports your argument?

_____

_____

_____

_____

_____

_____

_____

5. What will your principal need to know about social robots in order to understand your argument?

_____

_____

_____

_____

_____

6. How have your views changed since the beginning of this module? What caused you to change your views? How can you best change the views of those who disagree with you?

_____

_____

_____

_____

_____

_____

Writing Rhetorically

Entering the Conversation

Activity 19: Composing a Draft Letter

When you write a letter, choose an approach to the subject that matters to you. If you have strong feelings, you will find it much easier to gather evidence and convince your readers of your point of view. Keep in mind, however, that your reader might feel just as strongly about the opposite side of the issue. The following guidelines will help you make a good argument:

Heading

The heading consists of your address (but not your name) and the date. Telephone numbers and email addresses are not usually included here, but they are acceptable. Using block format, the heading goes in the top left-hand corner of the page.

123 Elm Ave.
Treesville, CA 95900
May 1, 2014

Inside Address

The inside address consists of the name and address of the person to whom you are writing. This address is usually placed four lines below the heading if a word processor is used or one line below the heading if the letter is handwritten.

Mr. Ezra Twig (*name*)
Principal (Title)
Falling Leaf School
Treesville, CA 95900

Salutation

Skip one line after the inside address and then type the salutation. Your choice of salutation depends on whether or not you know the intended recipient of the formal letter. The most usual greeting is

Dear So and so:
    the person's name (and specific title if know) and punctuated with a colon.

Body

Skip one line after the salutation and begin typing the body of the formal letter. This is the main part of the letter. It is best to use short, clear, logical paragraphs to state your business.

Problem statement

The first paragraph generally explains the problem/issue that the letter is addressing and your position on it. In this letter, you will need to clearly state your position on whether the principal should allow robots to be used as classroom assistants as part of an experiment at your school. Be clear and specific about what the issue is so that the principal has a reason to continue reading.

Context

The next part of the letter provides the context the reader needs to understand the issue. Since your principal will not have all the information that you have, you need to provide enough background so he or she understands the problem, but you will also need to be concise. Remember, your principal is busy and will not have a lot of time to spend reading your letter.

Discussion

In this part of the letter, you will make the argument for or against using robots as classroom assistants at your school. To make your argument effective, you will need to provide several pieces of **evidence** for your position from the reading you have done and the video you have watched. The evidence can be ideas, facts, and research, but be sure to select evidence that will be the most convincing to your principal. Identify the sources of your information so the principal can evaluate how credible it is. Your observations, as a student in the school, about how you and your classmates learn best will also be important evidence.

In addition, you should address the arguments of those who disagree with you since the principal may be reading letters from them also. Explain why those arguments are not as strong as the argument that you are making even if some of the points are good.

Order your arguments and evidence from the strongest to the weakest since the principal will tend to focus most on what comes first.

Conclusion

In the last paragraph, in a courteous way, make clear the action you want your principal to take. You may want to offer additional help, but at a minimum, you should thank the principal for taking the time to consider your recommendation.

Using the structure outlined above, write a draft of your letter to your principal about whether or not your school should experiment with using social robots.

Closing and Signature

This is the end of the letter. Skip one line after the last paragraph of the body of the letter and type the closing. Only the first word of the closing should be capitalized. It is punctuated with a comma. Leave several lines after the closing and type (or print) your signature. Your actual handwritten signature is to be inserted between these two

printed lines, written in ink.

Yours sincerely,

Sally Sapling

Sally Sapling

Revising and Editing

Activity 20: Revising Rhetorically

After you have finished a draft of your letter, jot down answers to the following questions to help you think about your audience, your purpose, your image as a writer, your arguments, and the evidence that supports them. Then revise your letter to clarify and strengthen each of these areas.

1. What does your principal probably think or believe about using robots as classroom assistants? How much background information will he or she need?

2. What is your purpose in writing to the principal? What are you trying to accomplish?

3. How will you convince the principal that what you have to say on the topic of classroom robots is important?

4. What are your main arguments? What evidence will be most convincing to your principal? What will you use from the reading and video? What personal experience will you use?

5. If other students in your class disagree with your position, what would they say? Since the principal will read their letters also, how would you answer them?

If your letter does not clearly address each of the preceding questions, you know you have to revise your letter to clarify and strengthen each of these areas.

You also need to consider the organization and development of your draft to make sure that your memo is as effective as possible.

Activity 21: Editing the Draft

You now need to work with the grammar and mechanics of your draft to make sure that your use of language is effective and that you use only standard written English.

Read your letter aloud to someone. Be sure to say every word that is on the page, and listen for mistakes or places that are hard to understand. Mark the place so you can go back and fix the problems.

Editing Focus

Letters need to be written in formal language and should not contain slang or other informal language that you might use in talking with your friends. Reread your letter and underline any places where you have used informal language. Then revise the sentences in more formal, academic language.

Hand in ALL drafts of your letter, placing your final copy on the top.

Activity 22: Reflecting on Your Writing Process

When you have completed your letter, answer these questions:

1. What was most difficult about writing a letter to your principal?

2. What was easiest?

3. What did you learn about trying to convince a specific audience, in this case your principal, that your arguments are correct?