

## NASA's Deep Impact Mission: Decision Making

# Communicating, Questioning, and Listening

### STUDENT TEXT

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#### Communicating

Communicating clearly and effectively is an important part of any presentation. Through effective communication, a presenter is able to convey knowledge and understanding of a topic, and therefore solicit appropriate feedback, input, or questions as needed. Whether in a classroom, on the job, or in an interview, the importance of communicating informatively has become recognized worldwide. When asked later in their careers, many college graduates rank communication skills as most important to their jobs, regardless of the field. In preparing to communicate effectively, once your topic or the content of your presentation is selected, make sure that you organize your presentation, research the information you plan to present, illustrate certain key concepts, and deliver your message crisply and clearly.

#### Organize

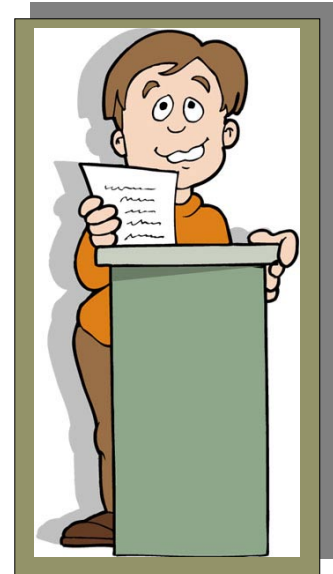
It is essential to provide your audience with information in a highly-organized format. A good way to begin the organizing process is to identify the main points that you want to cover. As most listeners cannot keep track of multiple main points, try to limit your points to between two and four. These main points comprise the central features of your presentation, and should be organized in the most appropriate order (chronologically, spatially, topically, etc.). An introduction should then be developed. The purpose of the introduction is to introduce the topic, list the main points of the presentation, and get the audience's interest and attention. Finally, you should develop a conclusion by creating a simple summation of the information revealed in the main points. The conclusion, of course, will signify the closure of the presentation.

#### Research

Your presentation should be based on research. Not only should each main point be researched, but also the items that surround and back up the main points. Collecting information for your presentation will provide helpful materials and ideas, useful ways of articulating or illustrating ideas, and so forth. A personal interview with someone who is an authority on the topic is a valuable resource. Gathering good materials serves a variety of purposes. Good information adds to the amount of evidence or data that can be revealed. It also enhances your credibility as a presenter. Good resources take the material presented beyond that of assumptions and offer good reasons why the presenter should be believed. It is important to remember, however, that resources that do not specifically offer additional insight or data that is germane to the presentation should not be used. If it seems like good information, but not fitting to the presentation at hand, set it aside. It is easier than throwing it away, and who knows? You may need it for another project one day.

#### Illustrate

When a visual aid supports a message in a presentation, it adds dramatic impact. Visual aids can be valuable tools for building interest and for helping you to get a certain point across. They can include models, charts, computer-generated graphics, drawings, graphs, objects, photographs, slides, videotapes, transparencies, or anything else that is appropriate for the presentation. Listed below are nine tips to assist you in the effective use of visual aids in your presentation:



- a) Practice with the visual aid in advance. Be sure that it functions correctly.
- b) Avoid presenting while using the chalkboard. Another group member may use an aid of this type, but the presenter of the moment does not want to turn his or her back on the audience.
- c) Explain the visual aid clearly. It is not enough to show the aid to the class; tell the audience what it means.
- d) Prepare the visual aid in advance. Early preparation will result in a quality piece of work, and the visual aid will be ready for you to use when you are practicing the presentation.
- e) Talk to the audience, not the visual aid.
- f) Be certain that the visual aid is large enough for the audience to see. A visual aid is useless if only those audience members seated in the front row can see it.
- g) Display visual aids only while they are being discussed. If kept in sight, they will serve as a distraction.
- h) Display visual aids where they can best be seen. You should determine the best placement of your visual aids prior to the presentation.
- i) Never pass visual aids among the audience members. At least three people in the audience will be more interested in the aid than they are in you – the last person who had it, the person who has it, and the person who will get it next.

### Delivery

Well-delivered presentations feature presenters who are prepared and interested in their topic. They establish eye contact with members of the audience, and generally display a clear sense of purpose. Good presenters do not seek to draw attention to themselves. For this reason, most will avoid conspicuous dress on the day they present. They will also avoid distracting mannerisms, such as chewing gum, staring or gazing, mumbling or talking in a monotone, or moving about too much or too frequently. The audience should be tuned in to your words, not you. Use the proper volume. The best presentation falls on deaf ears if it cannot be heard. Speaking rate, vocal variety, good articulation, and well-placed pauses are also important for a well-delivered presentation. You should practice presenting—at home in front of the mirror, in the car with family, or at a friend’s house. The more familiar you are with the presentation itself, the more at ease you will feel when you approach the front of a room to make the final presentation to your audience.

### Questioning

The ability to ask the right type of question, and the way you respond to the answers you receive, often determines whether or not you are able to determine what you need to know in order to proceed with any investigation. It is also important to help you determine if another investigation or theory is headed in the right direction.



#### THREE CATEGORIES OF QUESTIONS

There are numerous types of questions that may be asked. Along with other types, some questions may be designed to obtain differentiation, support, or clarification. The following is a description of each of these three potential categories of questions, and possible examples of each.

#### Differentiation

These types of questions call for those responding to apply a certain concept or set of circumstances to another situation, or to describe different processes they may have used to do the same thing. Examples include:

What would happen if...?

In what other ways could you...?

#### Support

These types of questions call for those responding to provide reasons or information to back up a statement, claim, or belief they have made. Examples include:

Why do you think this is true for all...?

What makes you say...?

### **Clarification**

These types of questions call for those responding to rephrase a statement, or to provide further description, details, extensions, or applications. Examples include:

If that is the case, then how does this...?

How would this apply to...?

## **QUESTIONING IN ORDER TO LEARN**

One of the most obvious reasons for asking a question is to extend or engage the thinking of an individual. There are several ways to do this effectively. When asking questions, try to:

- Paraphrase rather than praise. Open scientific discussion should not encourage conformity by praising the mundane. Paraphrasing and/or rephrasing signifies that you've heard and understand what has been said, without necessarily indicating that any judgments or opinions have yet been formed. Asking others to rephrase will also ensure that they understand what you have said.
- Use precise, not abstract, language. You've probably heard the saying, "If you can't dazzle them with brilliance, puzzle them with baloney." Don't believe it. If it works once, it certainly won't twice, not with anyone worth "puzzling" anyway. Be simple and straightforward with your questions, and say exactly what you mean, in as few words as possible.
- Question randomly, and acknowledge all responses. If you restrict your learning to only a few people, you don't learn nearly as much. If you only ask questions of a few people, you are restricting your learning to those few. If those to whom you ask questions have potentially valuable information to share, their questions should be acknowledged accordingly, and accepted. "Valuing" a response does not mean you have to agree, but helps you make sure that person continues to respond, so that you can continue to learn.
- Ask open-ended questions. "Yes" or "no" responses do not provide the depth of information you need.
- Base questions on responses. Keep detailed notes of discussions and who says what, and refer to that person or point in other questions. It will accomplish several things. For example, it makes everyone aware that when they speak, people are listening very closely. It also calls attention to conflicting comments from individuals who are supposedly taking the same point of view, or purporting the same claim.

## **Listening**

Listening attentively is an important part of participating in any presentation. If you are being asked to respond to information you are provided in the presentation, or if you are being asked to give input, whether in the form of questions, ideas, or additional information, it is especially critical. Learning to listen effectively and clearly is an often-overlooked way to improve communication skills. The best communicators, in fact, are usually the best listeners. Though we live in an age of rapid communication—facsimiles, e-mail, Web sites—the truth is that face-to-face communication is still alive and well. Have you ever seen the floor of the New York Stock Exchange when trading is in a flurry? What if everyone talked instead of listening? What if no one listened closely? One mistake could cost millions of dollars. Additionally, it is not just in dollars that high prices are paid. Think about the consequences of testimony given in error on the witness stand as a result of poor listening. Costly mistakes can happen in the corporate world, in the court room, at the negotiating table, and in an interview—all as a result of poor listening. According to listening experts like Dr. Lyman K. Steil of the University of Minnesota, Americans spend most of their communication time in listening, followed by speaking, then reading, and last, by writing. Yet, poor listening is all too prevalent. Poor listening skills often result in a lack of comprehension, which affects a person's ability to conceptualize,



analyze, and consider solutions. In short, the inability to listen effectively directly impacts critical thinking skills.

Scientists often search for ways to engage with each other in critical thinking exercises. Expanded critical thinking skills invite effective questioning, which in turn opens the door to engaging debates. The end result is the creation of an environment that is conducive to learning. Participants find out that they can offer their own ideas, concepts, questions, and perspectives in an environment that respects individual opinions. And most importantly, they learn the benefit of listening—to their peers, to other experts, and even to the public.

## TIPS FOR EFFECTIVE LISTENING

There are strategies for becoming a better listener, but they all require work and practice. Listed below are six tips on effective listening.

- **Listen for main points.** It is important to listen for content. Watch for signals from the presenter's eyes, body, face, voice, and gestures. Pay attention to visual materials.
- **Listen for evidence.** Resist the temptation to form a conclusion early in the discussion. Let the presenter complete his or her thought and then evaluate the evidence by distinguishing the specifics vs. the generalities, the believable vs. the incredible, etc.
- **Develop note-taking skills.** Listening is not exclusively memory related. Part of developing good listening skills is learning to write down the important part of the discussion.
- **Resist distractions.** Clear your mind if someone is presenting. This will help you to be more receptive to what they are saying.
- **Suspend judgement.** Never assume that you have heard correctly because the first few words have taken you in one direction. Some people only hear the first few words of a sentence, finish the sentence in their own minds, and miss the second half. These people represent most of the listening mistakes.
- **Don't be diverted by appearance or delivery.** Don't tune out a speaker just because you don't like his or her looks, voice, or general mannerisms. Pride yourself on remaining open to new ideas and information.