This paper describes a course conducted at Purdue University, Lafayette, Indiana, during 1971-73 which was designed to fill the speech communication needs of vocationally oriented students or "technologists" preparing to work in Indiana industries. Most of the students had completed a basic speech course; thus the approach, behavioral objectives, and text materials sought to develop skills in the organization and adaptation of technical subject matter, to encourage skill in the use of verbal and visual support, and to develop comfortable physical and vocal delivery. (Covered are the tools of communication--audience adaptation and supporting material--and technical speaking--the operations presentation and the maintenance presentation.) (DS)
Communication For Technologists:

A Proposed Course

Robert A. Vogel
Department of Communication and Theatre
Miami University
Oxford, Ohio 45056

Preface

The mission of the School of Technology at Purdue University is to provide appropriate career educational opportunities to students whose technological interests and aptitudes are essentially application oriented. The goal is to produce occupationally ready college graduates with salable skills to meet defined technical manpower needs, primarily for Indiana business, industry, and service agencies. Academic programs for the "technologist" are being offered in the following areas:

1. Two-year associate degree programs in engineering technology and related fields;
2. Two-year associate degree programs in nursing and mental health;
3. Two-year associate degree programs in aviation technology;
4. Associate degree program for professional foreman;
5. Bachelor degree programs in industrial supervision;
6. Bachelor degree programs for associate degree graduates (aviation, computer, construction, electrical, industrial and mechanical technologies, and nursing);
7. Bachelor degree programs in industrial education (industrial arts, vocational-industrial, and technical teacher education).

As the Speech Communication Association 1972 Summer Conference on Career Communication indicated, the more four year and junior colleges design programs for the vocationally oriented student, speech communication courses at this level must appropriately meet the needs of those students.
The basic philosophy in the planning of this course was that of providing a practical orientation to some of the public communication problems the vocational or technically oriented student will encounter in his daily work. The determination of the objectives for the proposed course was based on the consideration of the communication skills associated with the work of the technologist and commensurate with the needs and abilities of the vocationally oriented student.

The material that follows was the actual course conducted by this writer at Purdue University during the school years 1971-1973. The text materials cited were not binding recommendations; rather, they were cited to provide substantiation for some of the behavioral criteria. It should also be noted that students taking this course would already have had the basic speech course (this is merely a recommendation but not a necessary prerequisite).
The writer is indebted to Owen M. Stallard, Professor of Communications, Purdue University, who conceived of the basic format for the following course and who freely shared his time and material, both during this project, and while the writer taught the course at Purdue University, 1971-73.

R.A.V.
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1. To develop skill in the organization of technical subject matter.

2. To develop skill in the use of verbal and visual support materials in the presentation of technical subject matter.

3. To develop skill in the adaptation of technical subject matter to various types of audiences.

4. To develop skill in both physical and vocal delivery.
General Course Outline

1. The Tools of Communication

A. Introduction

1. emphasis upon anxiety and the problems of speaking before an audience.
2. applied exercise: 2-3 minute personal interest presentation in which the individual shares the experience of talking before a group with his classmates.

B. Audience Adaptation

1. lecture and reading material on elements of and application of audience adaptation materials.
2. applied exercise: 2-3 minute informative talk applying audience analysis principles.

C. Supporting Material

1. lecture and reading material on the types and application of verbal supporting material.
2. applied exercise: a one-point presentation utilizing verbal supporting material (5-7 min.).
3. lecture, reading material, and programmed instruction on the use and application of A-V material.
4. applied exercise: an informative presentation (5-7 min.) on a new development in the student's chosen vocational field utilizing both verbal and visual support materials.

II. Technical Speaking

A. Operations Presentation: to instruct a non-technical audience about the operation of a complicated piece of equipment (9-10 min.)

B. Maintenance Presentation: to instruct a semi-technical audience about the maintenance of a complicated piece of equipment (10-12 min.).

C. The Technical Proposal: To present a technical proposal to a group composed of management, engineers, and fellow technologists (15-20 min. plus a 5 min. questioning period).
3.

Texts


General Course Policies

I. To receive a passing grade, a student must:
   A. Conform to specific criteria as set forth under the C or satisfactory criteria for that assignment.
   B. Deliver before the class, on the date assigned, all assigned speeches plus additional oral exercises.
   C. Be passing in both speaking and written work to receive a passing grade.

II. Determination of Grades:
   A. See grade criteria for each assignment (a specific example is provided for + and - after the one-point assignment).
   B. Failure to give your presentation on the assigned day will result in an automatic F for that assignment (exceptions will be made when there is a verified illness or serious personal problem).
   C. Grade Percentages:
      1. One-point presentation: 10%
      2. New-development presentation: 10%
      3. Operations presentation: 20%
      4. Maintenance presentation: 20%
      5. Technical proposal: 30%
      6. Written work: 10%
Speech Communication of Technical Information:
Behavioral Objectives

I. Tools of Communication

A. Introduction: After completing the introductory material you should be able to describe in detail your reactions to speaking before the class and any distracting mannerisms you may exhibit.

1. Give a 2-3 minute presentation in front of the class based upon a personal experience or observation. Suggested subject areas are: a memorable personal experience; a hobby; your future occupation, etc.

2. After completing this assignment you should be able to describe orally to the class, the reactions you had to your speaking experience. Specifically, you should be able to answer the following questions:
   a. How did you feel physically and emotionally?
   b. Do you think you have any distracting mannerisms-either involving your voice, bodily, or facial movements?
   c. Do you think your audience listened to you-why or why not?

NOTE: The strategy of the above exercise is to create a relaxing situation in which the class shares common fears. In addition, it provides the instructor with an indication of the strengths and weaknesses of each speaker's delivery.

B. Audience Adaptation: After completing this section you should be able to:
   define in writing what is meant by audience analysis.
   define in writing the five basic types of audiences.
   apply these different types to the real world.
   understand the term pre-audience analysis.
   apply the term "feedback" to an actual speaking situation.
   understand the concept "noise" and how it applies to audience analysis.

1. Read "The Audience As A Variable" in Brooks, pp. 203-232. After completing this assignment you should be prepared to answer the following questions during a classroom discussion.
   a. What is meant by audience analysis?
   b. What are the 5 basic types of audience classifications?
   c. If you were to deliver a talk on a new development in your field under what classification would you place the following audiences and why?: top management of your company; company technicians; company maintenance staff; new operators of plant equipment; Kiwanis club; highschool vocational class.
d. If you were to deliver your talk to one of the latter groups, how would you (if you would) differ in your preparation and approach?

e. What is meant by pre-audience analysis?

2. Give a 2-3 minute presentation in front of the class on a particular technical project you are now involved with. If you have successfully completed this assignment, answer the following questions:
   a. How would you characterize the audience feedback?
   b. Can you describe a minimum of three distractions or "noise"—what were they?—be specific!
   c. Can you describe what 3 of your classmates (in different locations of the room) were both wearing and doing while you were speaking?—be specific!

C. Supporting Material:

1. verbal support: After completing this unit you should be able to: define in writing seven forms of supporting material.
   apply four forms of support to an actual speaking situation.
   understand the criteria that validates each of the seven forms of support you have selected above.
   b. Given a classroom written exercise, you should be able to answer the following:
      1) define in writing seven forms of verbal supporting material. These definitions should conform to the criteria as set forth in your readings (Brooks & Monroe).
      2) indicate in writing how you would apply a minimum of five of the forms of support in an actual presentation.
      3) be able to identify examples of the five forms of support you have applied.
      4) be able to assess whether each example you identified meets the criteria of a valid support as set forth in your readings.
   c. Give a 5-7 minute presentation on the date assigned in which you state a point and make it clear by using a minimum of 3 forms of support. This is your first graded oral exercise.
      1) To receive a C on this assignment, your presentation should meet the following criteria:
         a) conform to the time limit.
         b) ready on the date assigned.
         c) general statement limited to one point—i.e. take an idea and place it in a simple sentence (for example): the use of automation has been effective (see Monroe, pp. 181-189 for a full explanation of the one-point presentation).
         d) use a minimum of 3 forms of support (excluding visual support material).
         e) each form of support selected must conform to the criteria as set forth by Monroe, pp. 156-171.
f) speech should have one source of information (as it conforms to criteria set forth in Monroe).
g) the speaker must focus on the single point throughout the presentation.

2) To receive a B on this assignment, your speech should meet the following criteria (in addition to a, b, c, of the above).
d) use a minimum of 5 forms of support to include a hypothetical illustration, analogy, and explanation.
e) each form of support selected must conform to the criteria as set forth by Monroe, pp. 156-171.
f) 3 sources of information utilized (as it conforms to criteria set forth in Monroe).
g) the speaker, in addition to focusing on the one point throughout his presentation must develop that point clearly (demonstrable progression).
h) establish rapport-true feedback response.

3) To receive an A on this assignment, your speech in addition to the general criteria cited for a C speech, i.e., a, b, c, should:
d) use a minimum of 6 forms of support to include a hypothetical illustration, factual illustration, analogy, and statistics (each form of support must conform with the criteria as set forth by Monroe).
e) similar to B
f) 5 sources of information utilized (as it conforms to criteria set forth in Monroe).
g) similar to B
h) establish rapport-true feedback response
i) indicate a variety of mood and manner in delivery.

Grading Criteria: An Example:

A: All A criteria met.
A-: All A criteria met except any one of the following:
only used four sources of information
lacking a factual illustration
time limit was 30 seconds over
rapport-somewhat lacking.

B+: All B criteria met and any two A objectives included.
B: All B criteria met.
B-: All B criteria met except any two of the following:
only used four forms of support
omitted hypothetical illustration
exceeded time limit 45 seconds
included only two sources of information
rapport somewhat lacking.

C+: All C criteria met and any two B objectives.
C: All C criteria met.
C-: All C criteria met except any one of the following:
included only two forms of support
one form of support did not employ valid criteria
speaker strayed off the point during the presentation.
exceeded time limit by one minute.
D+. All C criteria met except any two of the above—just cited.

D: All C criteria met except any three of the above—just cited.

D-: Failure to achieve any of the four C criteria of the above (see comments under C-).

F: Was not ready on date assigned.

2. Visual supporting material: After attending the orientation class with Mr. Moses at the A-V center; completing the programmed instructional course at the A-V center; and reading Wilcox ch. 3 & 4. Monroe, ch. 10; you should be able to first (according to the criteria as set forth in the above assignments) operate and effectively employ the following A-V material: over head projector slide projector film strip projector movie projector tape recorder opaque projector flip chart flannel board posters chalk board.

Second: design, prepare, and effectively utilize graphs, maps, diagrams, and transparencies according to the criteria as set forth in the above assignments.

The following assignment should demonstrate both an application and synthesis of the above material and the material presented in the previous units.

a. Give a 5-7 minute informative presentation on a new development in your vocational field.

b. To receive a C grade on this assignment—the following criteria should be met:

1) ready on the date assigned.
2) conform to the time limit.
3) effectively utilize at least one form of visual support (excluding use of chalk board) according to the criteria as set forth in prescribed reading, lecture, and instructional assignments.

4) effectively utilize at least three forms of verbal support (according to criteria as set forth in Monroe).

5) should clearly have a main idea, i.e., your audience at the conclusion of your talk should be able to write down what the new development is and what is its significance.

6) conform to sound organization
   a) Introduction: does it orient the audience to the subject? does it make the audience want to listen? Is there a clear specific purpose?
   b) Development: Is there a progression to the presentation? are there any transitions? Is the structure clear?
   c) Conclusion: Is there an adequate summary? Is there an effective closing statement?
7) Delivery should be adequate, i.e., did you read your entire presentation? Could your audience hear you? Did you look at the audience most of the time?

c. To receive a B grade on this assignment, the following criteria should be met:
1) ready on the date assigned.
2) conform to the prescribed time limit.
3) effectively utilize at least two forms of visual support (excluding chalkboard) according to criteria as set forth in prescribed reading, lecture, and instructional assignments.
4) effectively utilize at least four forms of verbal support (according to criteria as set forth in Monroe).
5) should clearly have a main idea, i.e., your audience at the conclusion of your talk should be able to write down what the new development is? What is its significance? What are its major components?
6) conform to sound organization as stated in C requirements. In addition, however, transitions should be adequate; subpoints should clearly relate to main points.
7) conform to sound delivery as stated in C requirements. In addition, most of the presentation should not be read; there should be a minimum of slang employed; should be heard all the time by the audience; eye contact should have been consistent throughout presentation; voice should have a conversational quality.

d. To receive an A grade on this assignment the following criteria should be met:
1) similar to C & B
2) similar to C & B
3) effectively utilize at least three forms of visual support (excluding chalkboard) according to criteria as set forth in prescribed reading, lecture, and instructional assignments.
4) effectively utilize at least five forms of verbal support (according to the criteria as set forth in Monroe).
5) main idea similar to C & B.
6) similar to C & B; in addition, transitions should review.
7) similar to C & B; in addition, indicate a variety of mood and manner; establish rapport-true feedback response.

II. Technical Speaking

A. Operations Presentation: After completing this assignment you should be able to inform a group of non-technical employees how to operate a rather complicate machine.

Assignment: Give a 9-10 minute presentation in which you inform a group of non-technical employees how to operate a specific (rather complicated) machine.
10.

1. To receive a C on this assignment, the following criteria should be met.
   a. ready on date assigned
   b. conform to the time limit.
   c. hand in outline on date assigned conforming to criteria as set forth in graded objectives you have selected.
   d. the group should be able to perform the task after the presentation.
   e. should be a somewhat complicated machine, i.e., involve a minimum of four steps to successfully complete the operation (not including the on-off switches).
   f. effectively employ at least two forms of visual aids (excluding use of chalk board).
   g. An effective visual aid should be employed in the introduction and during the operational procedure.
   h. Introduction
      1) state the official name of the machine
      2) state both the overall and the immediate function of the machine, for example, this machine is one used in the manufacture of parking meters. Its function is to stamp out the plate which is used as a base for the meters.
      3) identify any other equipment which is used in relationship to the machine.
   i. Body
      1) limits of operation: safety and operational margins
      2) starting the equipment:
         a) show correct position of all controls prior to the starting of equipment.
         b) adjustments necessary to put equipment into operating conditions.
         c) point-out where dangers to operator exist.
      3) operating procedure
         a) normal operation: using a visual aid show the step-by-step procedure under normal conditions.
      4) shutting off equipment: show correct procedure for shutting down equipment.
   j. Final Summary: should include how to start machine; how to operate; how to shut off; and a final word on safety.
   k. Delivery:
      1) audience should have heard you
      2) read presentation 1/4 of the time
      3) should have looked at the audience most of the time
      4) distracting mannerisms should be held to a minimum
      5) technical terminology should have been held to a minimum; specifically, a minimum of five technical terms not explained.

2. To receive a B on this assignment, the following criteria should be met:
   a. similar to C
   b. similar to C
   c. similar to C
   d. similar to C
e. similar to C; in addition, machine should involve a minimum of seven steps to successfully complete the operation (not including the on-off switches).

f. similar to C; in addition one of those visual aids should be an overhead projector with a minimum of three transparencies utilized.

g. similar to C.

h. Introduction
   1) similar to C
   2) similar to C
   3) similar to C
   4) a chart should be utilized in the introduction—showing parts of machine, and using the proper terminology which will be used throughout speech.

i. Body
   1) similar to C; in addition, should include output limits.
   2) starting equipment
      a) similar to C
      b) similar to C
      c) similar to C
      d) show control conditions during warm-up
   3) operating procedure
      a) normal operation: similar to C
      b) abnormal indications: using visual aids show abnormal indications and assign a possible cause.
   4) shutting off the equipment: similar to C

j. Final Summary: similar to C; in addition, a visual aid should be employed.

k. Delivery
   1) similar to C
   2) almost all of presentation not read
   3) eye contact should have been consistent throughout speech.
   4) similar to C
   5) a minimum of three technical terms not explained
   6) should be a minimum of slang employed
   7) voice should have a conversational quality

3. To receive an A on this assignment the following criteria should be met:
   a. similar to C & B
   b. similar to C & B
   c. similar to C & B
   d. similar to C & B
   e. similar to C & B; in addition, machine should involve a minimum of nine steps to successfully complete the operation (not including the on-off switches).
   f. effectively utilize three forms of visual aids (excluding the use of the chalkboard); one of these visual aids being an overhead projector with a minimum of five transparencies utilized.
g. similar to C & B
h. Introduction
1) similar to C & B
2) similar to C & B
3) similar to C & B
4) similar to C & B; in addition, a photo or line drawing used to illustrate.
5) an initial summary—using a visual aid:
a) general data with respect to machine
b) how to start machine
c) how to operate the machine
d) how to shut off the machine

i. Body
1) similar to C & B; in addition using visual aid indicate physical and electrical data.
2) similar to C & B
3) similar to C & B
4) similar to C & B

j. Final summary: similar to C & B.
k. Delivery: similar to C & B; in addition, a minimum of one technical term not explained; establish a variety of mood and manner; establish rapport—true feedback response.

B. Maintenance Presentation: After completing this assignment you should be able to inform a group of non-technical employees (not technic ally trained in this particular area but above the level of an operator and below the level of a technologist) about the maintenance of a piece of equipment.

Assignment: Give a 10-12 minute presentation in which you inform a group of non-technical employees (they have technical aptitude) how to maintain (i.e. the immediate maintenance or repair— in terms of spare parts or equipment available) a rather complicated machine.

1. To receive a C on this assignment, the following criteria should be met:
   a. ready on the date assigned.
   b. conform to the time limit.
   c. hand in outline on date assigned conforming to the criteria as set forth in the graded objectives you have selected.
   d. the group should be able to perform the task after the presentation.
   e. should be a somewhat complicated machine, i.e., involve a minimum of six steps to successfully complete the maintenance,
   f. effectively utilize at least two forms of visual aids excluding the use of the chalk board. One of the visual aids should be the overhead projector with a minimum of 2 transparencies effectively utilized.
   g. visual aids should be employed in the introduction and during the maintenance procedure.
   h. Introduction
      1) state the official name of the machine
      2) state the overall and immediate function of the machine (similar to the operations procedure)
      3) an explanation of the general degree of maintenance that will be performed.
i. Body
1) Initial summary: tools and equipment necessary for repair or maintenance.
2) testing procedure: indicate the location and manipulation of correct and incorrect functioning of each part.
3) disassembly procedure: emphasize procedures that will prevent damage to various parts.
4) replacement or repair: give step-by-step procedures for repair.

j. Final Summary: summarize briefly disassembly, repair or replacement, and reassembly.

k. Delivery
1) audience should have heard you
2) read presentation 1/4 of the time
3) should have looked at the audience most of the time
4) distracting mannerisms held to a minimum
5) minimum of five technical terms not defined

2. To receive a B on this assignment, the following criteria should be met:

a. similar to C; in addition, cover briefly testing procedures, disassembly, repair or replacement; reassembly.
b. similar to C
c. similar to C except you have chosen B type objectives
d. the group should be able to perform the task after the presentation
e. should involve a minimum of eight steps to successfully complete the maintenance.
f. similar to C except a minimum of four transparancies effectively employed.
g. see major point in outline.
h. Introduction
1) similar to C
2) similar to C
3) similar to C
4) show the function of each part of the machine in terms of the overall function using the proper terminology which will be used in the talk.

i. Body
1) Initial summary: similar to C; in addition, utilizing a visual aid, indicate testing procedures, disassembly, repair or replacement to be covered, and reassembly.
2) testing procedure
   a) similar to C except use a visual aid
   b) similar to C
c) explain all major and secondary test points
3) disassembly procedure: similar to C except it is a step-by-step instruction.
4) replacement or repair: similar to C except use a visual aid.
5) reassembly procedure: similar to C

j. Final summary: similar to C except employ A-V and include a repeat of initial summary.
k. Delivery
   1) similar to C
   2) almost of all presentation not read
   3) eye contact consistent throughout presentation
   4) similar to C
   5) technical terminology: minimum of three technical terms not explained.
   6) voice should have a conversational quality.

3. To receive an A on this presentation, the following criteria should be met:
a. similar to C & B
b. similar to C & B
c. similar to C & B except you have chosen A type objectives
d. similar to C & B
e. should involve a minimum of ten steps to successfully complete the maintenance.
f. effectively utilize 3 forms of visual aids (excluding the use of chalk board); one of those visual aids being an overhead projector with a minimum of five transparencies to be effectively employed.
g. see major points in outline.
h. Introduction: similar to C & B requirements.
i. Body
   1) similar to C & B
   2) similar to C & B; in addition, indicate diagnostic test routines, i.e., indicate procedures for testing each part. Indicate control positions, normal indications, and causes of incorrect functioning.
   3) similar to C & B
   4) similar to C & B
   5) similar to C & B
j. Final Summary: similar to C & B.
k. Delivery
   1) similar to C & B
   2) " " " "
   3) " " " "
   4) " " " "
   5) minimum of one technical term not explained
   6) similar to C & B
   7) establish a variety of mood and manner
   8) establish rapport and true-feedback response.

C. The Technical Proposal: after completing this assignment you should be able to present a technical proposal to a group composed of management, engineers, and fellow technologists.

Assignment: Give a 15-20 minute presentation in which you present a technical proposal to a group composed of management, engineers, and fellow technologists—and be prepared to answer questions during the five minute questioning period.

Read: Wilcox-Ch. 4, 5, 6; after completing this assignment you should be prepared to understand oral reporting compared with written reporting (differences); organizing the oral proposal.
1. To receive a C on this assignment, the following criteria should be met.
   a. ready on the date assigned.
   b. conform to the time limit.
   c. hand in outline on date assigned and conforming to criteria as set forth in the graded objectives you have selected.
   d. outline must have approval prior to the delivering of the proposal.
   e. the technical proposal should grow out of a situation with which you are thoroughly familiar. It should come from your own background and experience.
   f. effectively utilize at least two forms of visual aids (excluding the use of the chalk board). One of the visual aids should be the overhead projector with a minimum of four transparencies effectively utilized (see specific below where aids are required to be employed).
   g. **Introduction:** this is the attention step; briefly state the problem in order to pull the thinking of the audience together.
   h. **Problem**
      1) state and present evidence of undesirable effects.
      2) state and present evidence of causes that brought about the undesirable effects.
      3) set up criteria solution must meet. The criteria should grow out of the solution. Use a maximum of five criteria and a minimum of three.
   i. **The Solution (use visual aids)**
      1) make a brief statement of the solution
      2) show how the solution meets the criteria set up in the problem phase.
      3) show proof of workability, i.e., by showing how your proposal has proven successful under similar circumstances.
   j. **Conclusion**
      1) state the advantages that will be brought about by the adoption of your proposal.
   k. **Delivery**
      1) audience should have heard you.
      2) read presentation 1/4 of the time.
      3) should have looked at the audience most of the time.
      4) distracting mannerisms held to a minimum.
      5) technical terminology: four (minimum) technical terms not defined.

2. To receive a B on this assignment, the following criteria should be met:
   a-e: similar to C
   f. similar to C, except a minimum of six transparencies effectively utilized
   g. **Introduction:** similar to C
   h. **Problem:** similar to C; in addition, one of the criteria is a cost criteria and a minimum of four criteria employed.
   i. **Solution:** similar to C; in addition, give a complete detailed explanation of the solution employing visual aids. Take each criterion one by one and show how your solution meets those criteria; also add proof of workability, i.e., how your proposal has proven successful under similar circumstances.
j. Conclusion: similar to C
k. Delivery
   1) similar to C
   2) almost all of presentation not read
   3) eye contact consistent throughout presentation
   4) similar to C
   5) technical terminology: minimum of two technical terms not explained.
   6) voice should have conversational quality
   7) replied adequately to several questions, i.e., to the satisfaction of the receiver.

l. additional criteria the B presentation should conform to:
   1) almost all the material presented should be relevant to the problem/solution.
   2) only a few facts omitted.
   3) the facts presented should conform to the criteria of logical reasoning.

3. In order to receive an A on this assignment, the following criteria should be met:
   a-e.: similar to C & B; in addition, you must gain the approval of your proposal.
   f. effectively utilize three forms of visual aids (excluding the use of the chalkboard); one of those visual aids must be an overhead projector utilizing a minimum of eight transparencies.
   g. Introduction: similar to C
   h. Problem: similar to C & B
   i. Solution: similar to C & B; in addition, if you know there are outstanding objections, show how the advantages of your solution outweigh the disadvantages.
   j. Conclusion: similar to C & B
   k. Delivery: 1)–4) are similar to C & B
      5) technical terminology: minimum of one technical term not explained.
      6) similar to B
      7) replied adequately to most questions; in addition, you restated question from the receiver before answering
      8) established a variety of mood and manner.
      9) established rapport and feedback response

l. additional criteria the A presentation should conform to:
   1) all material relevant to the problem/solution
   2) no pertinent facts omitted.
   3) the facts presented should conform to the criteria of logical reasoning.