

University of Michigan

**VALUE ENGINEERING AND ANALYSIS**

**Five-Day Workshop Seminar  
July 8-12, 1963**

**Comments  
Advance Preparation  
Program  
Assignments  
Assignment Work Sheets**

**L. D. Miles  
1963**

**TECHNIQUES OF VALUE ANALYSIS AND ENGINEERING**  
**University of Michigan--Five-Day Course**

**COMMENTS**

**An intensive course for "do-it" people**

**4 hours of advanced study and 4 hours of study each night**

**Followed by use of the techniques on products during the day.**

**Instead of physical products, it would be suitable for some to study services. They are more difficult during the learning period but equally productive.**

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**ADVANCE PREPARATION**

Select place - adequate space, acoustics, washrooms, availability coffee breaks.

Tables where men work in teams of three.

Vendors' exhibits.

Have phone nearby - allow phone cost \$10/man.

Have available handbooks and trade directories--Thomas Register and others.

Provide nearby secretary service.

Provide office machines for copying.

In every case of advance registration, provide textbook with advance assignment for first day.

Endeavor to secure advance registration of all so that all may start equally prepared. At least a full-day's time will be saved by the advance preparation.

Provide guidance in selection of projects.

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PROGRAM

DAY 1

L. D. Miles

Introduction to philosophy, concepts, approaches and techniques.  
Amounts of unnecessary cost found - why? - how to find.  
Function approach -- naming, division, classification, evaluation.  
Case histories.  
Case studies.  
"Specifics - Not Generalities" technique.  
Clarifying questions - Discussion.

DAY 2

L. D. Miles

Review  
Clarification as necessary in techniques 3-1, -2, -3, -4, -5, -6, -13.  
Case study.  
Some group work on some of their projects.  
Some individual work on the projects.  
Human involvement aspects.  
Clarifying questions and discussion.  
Arrive at reasonable understanding on  
    Approach  
    Selection of techniques  
    Use of techniques  
    Application of techniques 1, 2, 3, 4, 5, 6, 13  
    Significant functions of products  
    Values of some significant functions of some products

PROGRAM (Cont.)

DAY 3

1/2 day skilled creativity leader  
1/2 day - Mr. Johnson's staff - or to  
be selected by him

Clarification of techniques 7, 8, 9, 10, 11, 12.

Explanation of search techniques.

Work with men to get them away from the "part" approach, back to the "function". Get them away from the "do it or figure it out myself" approach, into the "search, find much help fast, and use it" approach.

Case histories using search technique and the resulting large and immediate assistance.

Individual work with the men on their projects.

Four vendors - previously chosen - who may contribute on the projects-- each to have a display table if he wishes and to have seven minutes to tell the group, "this is the kind of thing we do and this is how we think it will help you".

Clarifying questions and discussion.

DAY 4

Mr. Johnson's Staff

Re-emphasize and review functional approach.

Evaluate a function or two.

Present function evaluation by scientific means--conduct current -transmit torque--etc.

Present special knowledge--use of, importance of, locating of, developing of.

Present subjective factors which prevent objective decision making.

Have four suppliers properly selected and instructed as in DAY 3.

Press hard on project work--causing men to use the techniques to overcome the roadblocks which are stopping them.

Clarify by questions and discussion.

DAY 5

Mr. Johnson's staff

Present and discuss ...

Use of specialists,

Organization,

Motivation,

Measurement,

Application to purchasing (buy function - not material),

Retardants to implementation.

Finish a few more hard spots on projects.

Get simple summary sheets in management language as shown on page 31 prepared.

Select six to ten (plus or minus) projects for presentation at the closing exercises. Limit presentations to four minutes. Provide assistance to the presenters in making up rough charts, etc.

Allow men who wish to, in a discussion period, to tell what they will try to do with these approaches.

Tell men about Society of American Value Engineers.

Suitable diplomas, etc., as desired.

It is finished.

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ASSIGNMENTS

DAY 1

Read Preface.

Peruse text in one hour--so know the tone of what's to come.

Read and understand chapters 1 and 2.

DAY 2

Read and understand chapter 3...items 1, 2, 3, 4, 5, 6, 13.

DAY 3

Read and understand chapter 3...items 7, 8, 9, 10, 11, 12

DAY 4

Peruse chapters 4 and 5

Read and understand chapter 6-9

DAY 5

Read and understand chapter 8

Peruse chapters 10 and 11

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ASSIGNMENT WORKSHEETS

DAY 1

1. Name ten matured products on which advances in value engineering will control the success of the business venture more than will advances in performance engineering .
2. Is use value of importance in all products? Explain.
3. Is esteem value of importance in all products? Explain.
4. Who normally makes the decisions concerning use value?  
On what basis are they made?
5. Who normally makes the decisions concerning esteem value?  
On what basis are they made?
6. What is meant by a manufacturer's statement about his own product when it says: "Value of this product is unsatisfactory"?



**Assignment Worksheet**

**Day 1 (Continued)**

7. **Name five products which you consider good value. State why.**
8. **Describe the effect attitudes previously accumulated under a variety of experiences have on value.**
9. **Basically what does a customer really want when he buys a product? What did you want when you bought your latest pair of shoes?**
10. **List, in order of importance, what you really wanted, or will want, in selecting a refrigerator.**
11. **Name five products which you have purchased within the past year predominantly for the purpose of accomplishing a use.**
12. **Name five products which you have purchased within the past year predominantly for the purpose of conforming to a custom, providing appearance, providing interest, etc.**
13. **Look around the room and write down the names of five items and indicate their basic functions.**
14. **List function or functions of an axe handle and an axe head.**

15. Describe the function which a screw driver has specifically in relation to the details of the head of a screw.
  
16. Write down the essential steps in the procedure for action required when a tire becomes deflated in driving along the road.

Note the inferior results and the increased frustration of omitting any step of the procedure.

17. Select the step in the foregoing procedure which could be omitted with the least consequence, and describe the ill effects, minimized results, or increased efforts caused by omitting just this one step.
  
18. Divide the electric refrigerator into approximately ten "functional areas". For example, one functional area may be "enclosure", a second - "insulation".

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ASSIGNMENT WORKSHEETS

DAY 2

1. Describe the steps you would take in order to get away from the generality into workable "specifics" in the case of the following statement: "Underwriters require this type of construction."

2. The factory you are connected with is making parts which have the following costs:

Material	\$10
Labor	5
Variable overhead	8
Fixed overhead	12
Total	<u>\$35</u>

Vendor quotations for the same parts are \$38.

On the basis of the curve for organized action in make-or-buy decisions, at approximately what percentage of factory loading should the item be changed from a "make" part to a "buy" part?

3. State the main purpose of the "blast" portion of the technique, "Blast, create, refine".
4. Describe your interpretation of creativity. What is the basic difference between the creative approach and the analytical approach?
5. Sketch a dozen shapes for the operating handle on a toggle switch and suggest a dozen materials which might be used for it. Also suggest a dozen processes which might be used in fabricating the material for the handle.

## Assignment Worksheet

### Day 2 (Continued)

6. Write a list of twenty-five typical questions which might come up in connection with the design and manufacture of an electric iron.
7. State some of the first actions you might take in order to overcome the roadblock: "There must be a good reason for it or we would not have made it that way."

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## ASSIGNMENT WORKSHEETS

### DAY 3

1. Make a list of fifteen different areas of importance to a designer or manufacturer of electric motors in which he might benefit by extreme penetration of knowledge through locating the best possible source of that specialized knowledge.
2. Is the cost of each tolerance determinable?
3. Is the function accomplished by each tolerance discernible?
4. Who normally determines tolerances?
5. Are the costs produced by each tolerance normally provided to the tolerance setter before he makes his decision?
6. Name five reasons why vendors' available functional products are often not used even though they would accomplish the function reliably and simply at a much lower cost.
7. Name three ways of paying vendors for the use of their specialized skills and knowledge.
8. State some approaches you might take to determine whether there indeed exists an applicable process to accomplish your purpose.

Assignment Worksheet  
Day 3 (Continued)

9. How are tolerances normally determined for a specialty process?
  
  
  
  
  
  
  
  
  
  
10. Describe some circumstances under which the use of standards costs extra.
  
  
  
  
  
  
  
  
  
  
11. List some safeguards which might be established to protect against indiscriminately establishing special items, ideas, or processes when there in fact exist standard ones which constitute the best answer.
  
  
  
  
  
  
  
  
  
  
12. You are now using one million small alnico magnets per year in a thermostat . Name the techniques you are likely to use to identify unnecessary costs.

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## ASSIGNMENT WORKSHEETS

### DAY 4

1. Describe the environment which can be promoted by the attitude of the purchasing agent to generally minimize the personal loss of his buyers and promote decisions most beneficial to his employer.
2. Describe or quote the comments which you, as a manager, might appropriately make to cause more decisions for improving value to be made more promptly in the following circumstances:

Your purchasing agent has worked with a casting supplier in buying \$10,000-worth of patterns and molds, helping to establish inspection routines, testing and approving samples of production, etc., and has just qualified this supplier for furnishing \$100,000 worth of malleable castings per year. He then goes to a convention where he comes into contact with another supplier who has an automatic factory for making castings and who, for a cost of \$15,000 for molds, patterns, and tooling would supply the required castings for \$50,000 per year.

Your tool engineer has just purchased a \$1000 machine which is in the process of installation. Today he discovers that a different type of tool which, although also available, was not uncovered in his search prior to the placing of the order. It would produce the items with the same reliability at \$5000 per year less cost. The new tool would cost \$3000. He now proposes to stop installation, scrap the purchased tool, buy the new tool, and have it installed.

## Assignment Worksheet

### Day 4 (Continued)

Your draftsman has just completed a month's work of drawing and detailing the parts of a product you expect to manufacture. He comes to you and advises that he can now see how to use an entirely different approach employing totally different relative shapes. This would necessitate spending another month redoing all of his work but would result in an equally reliable product for half the cost.

3. List in approximate order of importance ten traits or characteristics or qualifications of a good value analyst.
4. What must be included in the training of practitioners ?



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## ASSIGNMENT WORKSHEETS

### DAY 5

1. List five objectives of a value engineering program.
  
2. List five steps in organizing and administering a program.
  
3. Why would a new value consultant have to do a very much more complete job of integration than he would do if he were new in some other job, such as purchasing agent, design engineer, or accountant?
  
4. Name some of the uncertainties and fears which will exist to some extent in the mind of a design engineer when he finds that a value analyst or value consultant is starting in his area.
  
5. What does value appraisal mean to you?
  
6. Describe several important actions a management may take which unmistakably show emphasis on value work.

Assignment Worksheet

Day 5 (Continued)

7. Describe the manner in which emphasis is applied to a design-engineering project.
  
  
  
  
  
  
  
  
  
  
8. Describe the manner in which emphasis is applied to shipments of equipment manufactured.
  
  
  
  
  
  
  
  
  
  
9. Describe measurement systems which might be used to measure the degree of success with which sales work is accomplished.
  
  
  
  
  
  
  
  
  
  
10. Describe how you would endeavor to determine (measure) whether or not the correct number of people are engaged in value work.