

# Olivetti Programing

## A Useful Programing Variation

E. H. Rocklyn, J. R. O. Sullivan and R. Zemke

Olivetti Programing is a method for insuring the learning of prose material. It is called Olivetti Programing because it was devised by the Olivetti Underwood Technical Training Center staff to teach Olivetti students mechanical and electrical principles of one of the newest Olivetti Underwood office machines. This programing variation consists of supplementing a prose text with a special programed text designed to produce learning behaviors common to effective programed instruction and adjunct programing. The learning process consists of reading about a relatively complete topic to gain a general understanding of and familiarity with the material, studying some portion of

this material so that detailed questions about it can be answered, and then answering items in the Olivetti Program. This reading, study-answer, study-answer cycle is repeated as many times as necessary to cover all of the material to be learned. Olivetti Programing is especially useful in covering detailed technical content of high concept density because it induces the student to respond in similar detail as a function of its format.

Olivetti Programing differs from regular program instruction in that two sources of material are intermittently used by the student. Its advantages over programed instruction are:

1. The Olivetti Program can be pre-

*Dr. Eugene H. Rocklyn*

*Director, Technical Training Center, Olivetti Underwood Corporation.  
Formerly Senior Research Scientist, Human Resources Research Office,  
George Washington University; Instructor, University of Pittsburgh. Ph.D.,  
Experimental Psychology, University of Pittsburgh.*

*James R. O. Sullivan*

*Manager, Programed Instruction Section, Technical Training Center, Olivetti Underwood Corporation. B.A., Harvard University.*

*Ronald Zemke*

*Programer, Programed Instruction Section, Technical Training Center,  
Olivetti Underwood Corporation.*

pared in a much shorter time with a great deal less effort—the time depending on the amount of original material to be covered and whether or not already prepared material is available.

2. The original prose text is available as permanent reference material after initial learning has been completed.
3. If the original material must be prepared, it can be produced by the subject-matter expert in conventional prose form. No special training is needed.
4. There is no special or lengthy training needed for successful programming of an Olivetti text.

The advantages of Olivetti Programming are:

1. An Olivetti Program can be prepared more quickly and easily than an adjunct program, and
2. more detailed and thorough coverage of the material to be learned is readily possible.

Both the concept and the production mechanics of Olivetti Programming are quickly and easily explained, so that any person with general training experience can do an acceptable job of producing an Olivetti Program on his first attempt by following these two series of steps:

### Content Production

#### Series A

Step 1. The first step in producing an Olivetti Program is to get a copy of the prose material to be supplemented. We shall assume that the prose material is relevant and appropriate for the learning purpose, whatever that may be.

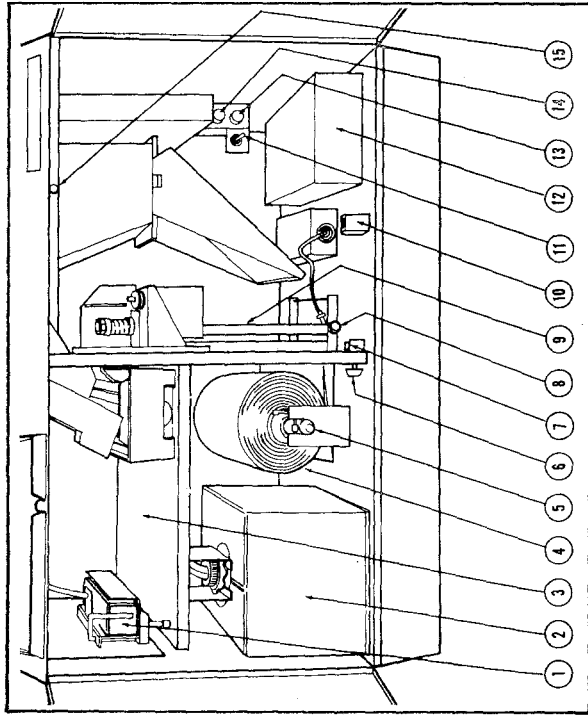
Step 2. Read through the material underlining only the important sentences and striking out the key word or words in that sentence. Usually only one word should be

deleted, occasionally two, but three rarely if ever. This step can be done by someone who has no prior knowledge of the subject matter and is perhaps best done by such a person.

Step 3. Type these sentences (triple spaced) with a blank where the key word or words should be, and type the key word or words below each sentence. Read each sentence, filling in the key word, and evaluate the sentences individually and as grouped by topic on the following points:

- a. *Are Criteria of Sentence Importance and Key Word Met?*—Does the sentence deal with an important concept or some part of such a concept? Is the key word really critical in regard to the concept being considered?
- b. *Optimal Response Position*—If necessary, reorder a sentence to place the blank near the end of the sentence. This should be done sparingly, if at all. Where it is not easy to reorder a sentence, the blank does not have to be moved but can be filled in with the initial letter or letters of the missing word as a prompt.
- c. *Sentence Clarity*—Unclear and confusing sentences in the original text, when isolated in this important sentence structure format of the Olivetti Program, tend to stand out and can be revised in the Program to eliminate their original deficiencies. This would be the only time a sentence would be rewritten and as many of the original words as possible should be included in this revision.
- d. *Smoothness of Transition between Sentences*—If necessary,

Figure 1. Sample of a Pictorial Frame. (Picture portion is a foldout.)



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Location of Parts is covered in this series of frames. Write the corresponding part name in the indicated spaces:

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (5) Spindle \_\_\_\_\_
- (6) Pre-Threading Paper Switch \_\_\_\_\_
- (7) \_\_\_\_\_
- (8) \_\_\_\_\_
- (9) \_\_\_\_\_
- (11) \_\_\_\_\_
- (12) Relay Chassis \_\_\_\_\_

a less important sentence with a key word deletion can be included to act as a transition between two more important sentences. The sentence group on a specific topic should hang together in a relatively coherent fashion.

- e. *Emphasis or Review*—Where necessary, appropriate sentences can be *reinserted* to reinforce selected concepts or as general review material. Where drawings are involved, pictorial frames can be used with blanks to be filled in with the appropriate labels.

Upon completion of Step 3, this content is ready for review, if necessary, and production in the typical

programed instruction format. Such a format consists of a page with a sentence (or two) with a blank or blanks to be filled (written) in and with the confirmation or correct answer on the next page. Placed below the correct answer is the page number of the original text on which the correct answer can be found.

### Format Production

#### Series B

Step 1. For illustrative purposes only, divide the prose material into reading segments, and each of these reading segments into two or more study segments. A reading segment is the portion of material that hangs together in a coherent whole—usually a chapter or com-

	<p>Now that you know the material in Pages 1.1, 1.2, and 1.3 pretty well, you are ready for your next step. You will need a pencil or pen.</p> <p>Turn to next page.</p>
	<p>Start with the next page and answer each of the questions until you have covered all the material that was presented in Pages 1.1, 1.2, and 1.3 of the Technical Manual. For each question or questions, write in what you think is the correct answer in the blank provided for that purpose. Then turn the page, check the correct answer or answers given on the next page, and see if you were right or wrong. If you were wrong, make an X or a mark beside the answer. If you were right, make no mark, but in both cases, go on to the next question.</p> <p>Now, go ahead...</p>

Figure 2. Sample Set of Program Introductory Directions

plete treatment of a topic. A study segment is a sub-portion of that material dealing with a sub-topic. Reading segments can range anywhere from two to twenty-five pages. Study segments would then, in terms of pages, be the same portion of the reading segment page-total and could range anywhere from one to ten or fifteen pages.

Step 2. Count the number of sentence blanks in each study segment, and if necessary, combine segments to reach a minimum of ten blanks or further sub-divide a study segment if it exceeds a maximum of forty blanks. This makes for reasonable variation in responding (reading) to the prose text and responding

(filling in blanks) to the Olivetti Program.

Step 3. Compose a set of simple directions that tell the student to read the first segment of prose for a general understanding of and familiarization with the material, and then to carefully go over the first study segment so that he can answer detailed questions on the material in that segment. After this study is completed, he should then turn to Page 1 in his Olivetti Program where he is given directions on how to use the Program.

Step 4. Select for each set of frames covering each study segment an error criterion; one per every ten frames seems to be fairly accept-

<p>image, carbon particles</p> <p>Page 1.3</p>	<p>Now you can tell if you have learned and remembered the material you have read.</p> <p>You have been tested on Pages 1.1, 1.2, and 1.3, <u>Introduction</u> and <u>Principles of Operation</u>. Check back through these questions and see how many you missed. If you missed 2 or more, you should review Pages 1.1, 1.2, and 1.3 carefully and in addition, check each question that you missed. Write in the correct answers for those questions that you may have missed the first time.</p>
	<p>When you are satisfied that you do know and can remember the facts and principles presented on Pages 1.1, 1.2, and 1.3, study Pages 1.4 and 1.5, <u>Features and Specifications</u> and <u>Machine Location</u>, in the Technical Manual.</p> <p>Carefully study the facts and principles that you think are most important in Pages 1.4 and 1.5. When you think you know the material pretty well, come back to this Program and answer the questions on Pages 1.4 and 1.5, starting on the next page.</p>

Figure 3. Sample Set of End-Of-Study Segment Directions

able. Then prepare on separate pages further directions aimed at review if the error criterion was exceeded and continued study or reading as appropriate if the error criterion was met. These directions define, in terms of headings and page numbers, the size of reading and study segments.

Step 5. Put the frame pages and the direction pages together to form the complete Olivetti Program.

Step 6. Prepare an objective test with number of items per study segment dependent on frame density in that segment. Such a test will be highly representative of the material to be learned since all topics will be covered with the proper amount of emphasis.

### Testing

Individual testing and group testing, as well as validation studies involving a control group with no Olivetti Program, are, of course, advocated if time and circumstances permit. If the given prose material has been accepted as containing what should be learned, then Olivetti Programming will ensure that the material is learned if the given procedures are followed. This is supported by our experience in using this programming variation as described below.

An Olivetti Program was prepared for that portion of an existing technical manual that covered operation and parts movement of the office machine being studied. New material on basic electricity and on the electrical

components and circuitry, including how to read schematics of this machine, was originated by a subject-matter expert in prose form, and a second Olivetti Program was prepared. The two prose texts and the two Olivetti Programs were then sent to students for home study. Other than requiring that the student take a final test on the material to be learned as a prerequisite for further training under conventional classroom conditions, the training staff did not monitor the learning process.

That the unmonitored student will follow given procedures most of the time during the learning process was indicated by the results of questionnaires given to students who used Olivetti Programs. Questionnaire data also showed that they got a great deal of help from these programs, and that there was no problem in using them. They agreed unanimously that they would like an Olivetti Program for use with any other prose material to be learned.

Objective test results indicated that, on the average, about 80% of the material in the original texts had been learned. With this background, all students were successful in mastering the classroom portion of this training system.

In summary, Olivetti Programming is a useful programming variation that should be included in the armamentarium of a training staff to ensure learning of prose materials in an effective and relatively inexpensive fashion.