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An Experimental Project for Individualizing Instruction on the IBM Composer

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Abstract

The purpose of this study was the design, development, and evaluation of a coordinated software-hardware system designed to provide instruction in the basic skills and knowledge required to successfully operate the IBM Selectric Composer. More specifically, the purpose was to develop a software packet designed around the LearningActivity Package concept, and to place these materials in a study carrel with all the necessary equipment including the IBM Composer. The study carrel (hardware), the Learning Activity Packages (software), and the IBM Composer (three dimensional activities) were coordinated into a total instructional system. An instructional system of this nature was desired because there was a need to increase student exposure to the IBM Composer, while at the same time keeping individualized instructor contact time at a minimum.

Specific behavioral objectives selected for the system were:

1. Upon completion of LAP I, the student will be able to choose a given type element, properly adjust the Composer for use with that element, and will be able to show, if asked, a working knowledge of the leading dial, lock lever, escapement lever, margin sets, and impression control.

2. Upon completion of LAP II the student will be able to successfully complete an activity requiring him to demonstrate a working knowledge of the paper release, the paper bail, the index key, the paper support, carrier, tab controls, backspace keys, zero index lever, ribbon lift control, and space bar. The student will also be able to properly utilize the hyphen, dash, quotation marks, and cent sign, through completion of lab exercises.

3. Upon completion of LAP III, the student will be able to demonstrate, through completion of a post-test, a working knowledge of the quantity dial, the value dial, the justification tube, the justification window, the removable scale, and the pica-point system of measurement. Given a paragraph of written information, the student will be able to reproduce the copy with any given type element, using flush left and right margins.

4. Upon completion of LAP IV, the student will be able to demonstrate, through completion of a post-test, use of the fixed space method of justification and centering. He will also be required to produce copy that is properly centered, both vertically and horizontally.

Approved by _____ Chairman
Graduate Committee

July 2, 1979
Date

AN EXPERIMENTAL PROJECT FOR INDIVIDUALIZING INSTRUCTION ON THE IBM COMPOSER

RESEARCH PAPER

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James P. Cox

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CHAPTER I

Introduction

Individualized learning systems designed to meet the needs of individual students are generally viewed as being innovative approaches in education. This is true of the original software learning activity packages as well as the recently developed hardward oriented multi-media approaches. A combination of these two approaches coupled with three dimensional student activities is another approach which shows significant promise for education methodology. This new educational concept is called the "instructional systems" approach to learning. More specifically, it is a systems approach that includes a coordinated hardward-software package that is coupled with skill training. The emergence and general acceptance of this form of education has prompted teachers in all fields to develop appropriate materials for their respective areas.

Statement of the Problem

This study will involve the development and evaluation of such a system, designed around the IBM Selectric Composer. The IBM Composer is a sophisticated typewriter which has become one of the most efficient methods of cold-type composition in the Graphic Arts industry. The high cost of the Composer makes it

impractical for a school to have more than one machine. Because of its complexity, instruction on the Composer must be thorough, precise, and regulated. The problem then is one of exposing individual students to the IBM Composer and conveying to them the knowledge and skills necessary to successfully operate the Composer in an efficient manner.

It is difficult for the Graphic Arts instructor to fully utilize a piece of equipment of this nature because it requires that students be given instruction on an individual basis. An alternative means of instruction, the IBM Composer Instruction Manual, has proven to be an inadequate substitute for instruction on the Composer for classroom use. This manual is geared toward the individual who is in the Graphic Arts industry, not the school classroom. Too many assumptions were made in the writing of this manual. These include gaps in the written instruction, a lack of appropriate illustrations, and poor transition between two and three dimensional activities.

Purpose of the Study

The purpose of this study was the design, development, and evaluation of a coordinated software-hardware system designed to provide instruction in the basic skills and knowledge required to successfully operate the IBM Selectric Composer. More specifically, the purpose was to develop a software packet designed around the Learning

Activity Package concept, and to place these materials in a study carrel with all the necessary equipment including the IBM Composer. The study carrel (hardware), the Learning Activity Packages (software), and the IBM Composer (three dimensional activities) were coordinated into a total instructional system. An instructional system of this nature was desired because there was a need to increase student exposure to the IBM Composer, while at the same time keeping individualized instructor contact time at a minimum.

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4. Upon completion of LAP IV, the student will be able to demonstrate, through completion of a post-test, use of the fixed space method of justification and centering. He will also be required to produce copy that is properly centered, both vertically and horizontally.

Methods of Research

This study involves historical, descriptive, and experimental research. Historical research was undertaken to determine the origins of instructional systems as well as Learning Activity Package development. Descriptive research was conducted to determine the present stages of development of various types of instructional systems. These two areas of research were classified in the Review of Literature under the more general heading of Library Research. The term Library Research as used in this research report is defined as the study of any printed material which may or may not be found in the usual library.

Experimental research conducted includes the design, development, and evaluation of a total instructional system on the IBM Selectric Composer. Emphasis in this area of the study was on evaluation of the efficiency and educational value of the system.

Limitations of the Study

The experimental research in this study involved design, development and testing of an instructional system for the IBM Composer. Five students were selected to complete LAP programs and evaluate system effectiveness. The students were pre-tested to determine typing ability. The results of the post-tests from the appropriate Learning Activity Packages were analyzed to determine the degree of proficiency that was gained by the students.

Presentation of Data

The data from the experimental aspects of the study are presented in the following forms: (1) LAP Programs that were developed are contained in Appendix A; (2) Pre-tests and Post-tests utilized to evaluate results are contained in Appendix B; (3) An analysis of the factors involved in the evaluation of the experimental LAP programs is contained in the Findings of the Study. Data reported includes factors on time, achievement, and student reaction to involvement with individualized LAP programs.

Definition of Terms

Cold-type Composition	Any means of producing copy that does not involve the use of lead type or typesetting.

Copy	A typographers term that refers to written or printed material that is used to produce the image used in offset lithography.
Hardware	"The mechanical teaching machines, and audiovisual equipment such as video-tape recorders, projectors, tape recorders, and computer setups." (U. S. Civil Service Commission, 1969, p. 3).
Instruction	"Any specifiable means of arranging interaction between a student and a series of events resulting in a change of behavior." (Knirk, 1968 p. 46).
Instructional System	"A systematic way of developing training (knowledge and skills)." (U. S. Civil Service Commission, 1969, p. 2).
Man-Machine System	"An organization whose components are men and machines working together to achieve a common goal and tied together by a communication network." (Saettler, 1968, p. 271).
Study Carrel	"This essentially means providing a student with a desk where privacy is provided by several panels that prevent the student from seeing things that happen around him." (Beggs, 1965, p. 168).
Software	"Items necessary for the use of and/or to be fed into hardware." (U. S. Civil Service Commission, 1969, p. 3). This includes programs, written objectives, evaluation materials, and any other written materials.

CHAPTER II

REVIEW OF LITERATURE

Instructional Systems

An instructional system refers to a complete design for learning. An abbreviated definition of a system is "a point of view, plus a few key ideas, integrated into a logical pattern." (Knirk, 1968, p. 82.). Systems development is not a new concept, but the field of education is merely on the frontier of its development.

The big thrust toward a systems approach occurred in the 1950's. The military services were the prime users of this concept, which they called systems engineering. During the period from 1953-1960 new job classifications such as systems analyst, programmers, and systems designers were formed. These new occupations marked the transition from the last days of systems engineering to the beginnings of the systems approach; thus breaking the standard that good hardware was the only way to a successful system. The term total systems approach was derived about 1960. This approach reflected "the interaction of men and machines within the context of an organization in terms of specific tasks and outcomes." (Saettler, 1968, p. 269). The result of the success the military found in instructional systems can be seen in the rapid growth and development of systems technology in many industrial, scientific,

and governmental sectors.

In recent years the leaders in education have become increasingly involved in instructional systems development. Unfortunately, education moves slowly, and it is still in the infant stages of instructional systems development. One reason for this is that educators cannot simply transfer what is known about systems methodology to their field. Instead they must transform what is known, as there is a need for reworking these goals to meet educational needs. In his book Instructional Systems, Bela H. Banathy further describes this problem. "Even though there is an impressive list of evidence of the educational use of the systems approach, the designer of an instructional system has only very limited reliable data available to him." (Banathy, 1968, p. 19). This is true because it is a new field and little is yet written about it.

Paul Saettler has some very strong opinions about the relevance of instructional systems, and their development. In his book A History of Instructional Technology he states,

> Within the educational context, the methods and media of communications, patterns of planning and utilization, and a modern logistics of instruction, must be organized into instructional systems in order to secure more effective and efficient learning. If we are to cope adequately with the urgent needs and problems of education in a swiftly changing technological culture, a more systematic approach to communication and learning is vital.

> Because the approach to instruction hitherto has been piecemeal, the result has been a disconnected, fragmented series of innovations. What is needed are integrated, organized systems of instruction in which all components (including teachers) of the instructional process are fitted together into a system that is capable of providing individualized instruction for each learner-communicant. (Saettler, 1968, p. 270).

An instructional system deals with a goal and an interaction between parts of the whole. The system may be comprised of a man-machine system, with the components being individual learners and the machines they control. Machines are not necessarily a part of all instructional systems. In its broadest sense an instructional system consists of a group of interrelated components that interact with each other. Below is a list that includes the primary components and/or traits that are common to most systems:

1. A study of the instruction needed by the learner.
2. An analysis of time (when instruction is needed and when it isn't needed).
3. Appropriate design
4. Organization
5. Operation of a system which can achieve the desired behavioral goals.
6. It must be effective and efficient.

The main stages of instructional systems development are design, development, and evaluation. Instructional system design begins with a series of questions.

What, where, when, and how are the questions that must be answered. The answers to these questions provides a list of specific goals or purposes that serve as the basis for system development. In effect, these goals formulate the instructional objectives of the system. Learner goals stem from a student's need and from the outcomes that are desired by educators, schools, and administrators. "In terms of the teacher-communicator, all instructional system design should be structured by a need situation. This does not imply that the whole instructional system should be based on the immediate interests, and problems of learners. Although the felt needs, interests, and problems of learners need attention in any learning situation, the primary tasks of the teacher-communicator are to aid learners in formulating goals which meet their needs and to help them develop socially necessary goals." (Saettler, 1968, p. 275).

The development stage refers to research on learning as well as development of methods, materials, processes, and procedures that will compose the total system. This state also includes the planning, production, selection, and utilization of various components that form the whole. An important facet of this stage might include the development and training of a team or staff, to create the most effective learning environment that is possible with the system.

Upon completion of the developmental stage, the components must be assembled to form the total instructional system. Complete evaluation of the system may take years, as evaluation is a continuing process. The evaluation process should include a series of controlled activities and tests that can be analyzed to measure effectiveness and efficiency of the system.

To summarize, a total instructional system is composed of many parts; planning, designing, developing, managing, and evaluation. These parts form together to create the whole, the total instructional system. It is important to remember that the "whole is greater than the sum of its parts." (Resnick, 1972, p. 155).

Learning Activity Packages

Learning Activity Packages are designed to be used by the student on an individualized basis. A Learning Activity Package (LAP) consists of behavioral objectives, rationale, readings or source materials, self-evaluation, final evaluation and other regulated activities. LAP's are completely flexible and can be used in all areas of education.

The primary objective of a LAP can be defined as being the purpose of the lesson, unit, or study. Usually the primary objective consists of learning a set of skills, and/or acquiring a certain portion of knowledge. The

primary objective is often categorized by the title of the packet, for example, Setting Up and Adjusting the IBM Composer.

The rationale helps provide motivation to the learner. It expresses in simple terms why it is important for him to understand the concepts involved in the particular LAP. The rationale should stimulate interest in the area, but for some students the teacher may have to serve as a supplement.

Once the student is motivated, he must know what exactly is expected of him. The behavioral objectives specify the exact tasks that are to be completed, and the proficiencies that will be required. There should be no doubt in the learners mind as to what is expected of him.

A self assessment is built into each LAP program. Because learners are individuals with different backgrounds and potentials, the LAP must provide for all levels of knowledge. In his article "Learning Activity Packets for Individualized Instruction", D. L. Jeldon states, "In the Learning Activity Packet the students are given three choices to determine their degree of understanding of the behavioral task set before them. They are:

1. I understand all of the tasks and therefore have the required knowledge and skill to perform them.

2. I understand part of the tasks and will study those parts with which I am unfamiliar.

3. I understand none of the tasks and will proceed with the study of the lesson as recommended by the packet." (D. L. Jeldon, 1972, p. 138).

These choices give the students the opportunity to assess their own knowledge in relation to the stated behavioral goals. They start the program where their own background leaves off. This is essentially the backbone of individualized instruction, student paced learning.

The learning activity (background information) found in each LAP can be comprised of any combination of the following elements:

1. Recommended readings that are related to the packet's objectives.
2. Other media materials, films, slides, or tapes.
3. Lab exercises geared toward behavioral goals.
4. Study guide questions.
5. Summaries that orient the learner toward a complete understanding of the concept at hand.

Upon completion of the learning activity, the student and teacher must make an evaluation of the entire assignment. This evaluation could be in the form of a written test, a lab exercise, an oral exam, or any combination of these.

In review, the LAP is basically a management system for learning which allows the student, through a multi-media opportunity, to become involved in a diversity

of learning experiences. The LAP is designed to give the student an individualized, student paced, system of education. Most materials in the LAP provide for self-study, with occasional exceptions, when teacher demonstrations are needed. LAP's provide for the individual differences of the students, and they place the teacher in the role of a regulator rather than a regurgitator. The teacher assists and instructs those students who need help.

Study Carrels

Because of the independent nature of individualized instruction, one facility which deserves attention is the study carrel. The study carrel is essentially an enclosed booth type arrangement that provides a student with all the equipment and/or space necessary to permit efficient study.

In his article "A Prolegomenon to Study Carrel Planning" Carl W. Vogel stated,

> Carrels should be designed to avoid a severe "institutional" appearance. Students might be encouraged to use carrels more frequently if they are colorful, of different hues, and designed to have slightly different shapes.

Vogel went on to say,

> The basic carrel system can be used at first as individual study locations and with the addition of tape recording equipment the system might function as a language laboratory. Additional equipment would allow the system to function as a total learning center.

Chapter III

FINDINGS OF THE STUDY

Presentation of Data

Data from the experimental portion of this study was summarized in the tables found on the next three pages. Tables I, II, and III identify the results of typing speed tests, pre-tests, post-tests, and lab exercises. Each table includes a series of columns which denote the tests and exercises that were mentioned above. Two tests yielded results in words per minute and were designated in their respective columns as words/min. (words per minute). The remaining columns indicate the number of possible points for each of the tests or lab exercises and list the score achieved by each of the students. A key is found at the bottom of each table that will clarify the data.

The experimental research included two typing speed tests which were conducted on an electric typewriter which had a keyboard arrangement similar to the one which is found on the IBM Composer. The first of these tests was used to measure the individual student's typing ability before entering the system. A copy of this test can be found in Appendix A. A two minute timing was used for this test, and the results were recorded in Column A, Table I, in units of words per

TABLE I

Column	A	B	C	D	E	F	G
Measure-ment	Typing Speed Wds/Min.	LAP I Pre-Test 10 points	LAP I Post-Test 10 points	LAP II Pre-Test 10 points	LAP II Post-Test 10 points	LAP III Pre-Test 10 points	LAP III Post-Test Words/Min.
Student Number							
1	60	6	8	*	8	6	27
2	55	*	8	*	9	*	22
3	40	*	8	*	10	*	21
4	41	*	8	*	9	*	18
5	84	8	10	7	9		

Key

1. Typing speed in columns A and G are measured in words per minute (Wds/Min.)
2. All Pre-Tests and Post-Tests had ten questions. The figures in columns B through F indicate number of correct responses on each test.
3. An asterisk (*), denotes a student who did not take the optional Pre-Test because of a limited background in the area.

TEST RESULTS

TABLE II

Column	A	B	C	D	E	F
Measure-ment	LAP II Exer. I 5 points	LAP II Exer. II 5 points	LAP II Exer. III 10 points	LAP II Exer. IV 10 points	LAP II Exer. V 5 points	LAP II Exer. VI 5 points
Student Number						
1	5	5	5	8	5	4
2	5	5	3	8	5	5
3	5	5	4	9	5	5
4	5	4	2	7	4	5
5						

Key

1. The student number in Table II coincides with the same student number in Table I.

2. Table II reports the results of six exercises (Exer.) that were required in LAP II.

3. The number of points possible on each exercise was recorded directly below the exercise number for each column.

LAP II LAB EXERCISE RESULTS

TABLE III

Column	A	B	C	D	E
Measure-ment	LAP III Exer. I 25 points	LAP III Exer. II 25 points	LAP III Exer. III 25 points	LAP III Exer. IV 10 points	All LAP's Total Points in Exercises
Student Number					
1	25	24	25	8	114
2	23	25	23	9	111
3	21	23	25	10	112
4	25	19	18	9	98
5					
					125 total possible

Key

1. The student number in Table III corresponds to the same student numbers that are found in Tables I and II.

2. Table III records the results of LAP III lab exercises (exer.). The total points possible for each exercise are listed directly below the respective exercise numbers.

3. Column E represents the total lab exercise points that each student achieved out of a possible 125 points.

LAP III LAB EXERCISE RESULTS

minute. All errors in typed copy were deducted from the student's word per minute total at a rate of one word per minute for each error. For example, if a student typed 50 words per minute and made eight errors, he would net 42 words per minute.

The second typing speed test did not occur until completion of Lab Exercise III in Learning Activity Package III. This timing utilized the same speed test material as the first timing, with the exception that all typed copy was to be justified. To compensate for the double typing that is necessary when justifying, a four minute timing was used. The words per minute total from this test was recorded in Column G of Table I. The words per minute were calculated in the same manner as the initial speed test with the exception that errors were only counted in the finished justified copy.

Table I also includes the results of three Pre-Tests and two Post-Tests. These five tests consisted of ten questions each. Copies of these tests can be found in Appendix B, in the respective Learning Activity Packages. The Pre-Tests were optional, self-corrected, tests. If the student had no knowledge or limited background in the area discussed in a specific LAP, he would usually not complete the Pre-Test. Cases where this occurred were designated with an asterisk in their respective columns.

LAP I and LAP II included manditory Post-Tests. The results from these tests are found in Columns C and E in

Table I for the respecitve Learning Activity Packages. The Post-Test for LAP III consisted of the justification speed test that was mentioned earlier.

The remaining ten columns found on Tables II and III represent the results of ten different Lab Exercises that are found throughout LAP's II and III. These were awareness and familiarization drills that aided the student in gaining knowledge of the operation of the IBM Composer. Success in these drills was measured by how well the students were able to follow directions and complete the given exercises with the instruction they had completed. Each exercise had a given number of possible points which was noted at the top of each column. The achievement for each student in each exercise was then listed in the respective columns with regard to student number.

Interpretation of Data

The students who completed the system represented a variety of disciplines and backgrounds. Four of the five participants were college graduates. The test group included people from the following fields:

1. Industrial Arts - teaching
2. English - sportswriter
3. Upper Elementary - teacher-to-be
4. History - teacher
5. Secretary

The purpose of this study included the development of an instructional system designed to provide instruction on the IBM Selectric Composer. Assuming that the Lab Exercises and

various tests represented valid measurement devices, all test subjects achieved the basic skills and knowledge necessary to operate the IBM Composer.

Results on the Post-Tests reinforce the fact that a knowledge of operation of the Composer was gained. All participants scored 80% or better on the Post-Tests which contained five completion items and five true-false items each. High scores on the Lab Exercises (see Table II and Table III) indicated that the skill requirement was also met. Only one of the test subjects failed to achieve an 80% or better rating on the Lab Exercises.

Probably the most valuable measurement that is represented by the data in this study is the justification speed test (Column G, Table I). The results indicate that participants were able to complete that skill test at a rate of 40%-60% of their normal typing speed. This substantiates the fact that with relatively short training time (3-4 hours), the test subjects were able to meet the desired goals of the system with a high degree of proficiency. It seems clear that with increased familiarization on the Composer, the justification speed test scores should increase.

The data from this study clearly supports the use of the instructional system technique as an effective means of individualizing instruction on the IBM Composer.

Chapter IV

CONCLUSIONS AND RECOMENDATIONS

Conclusions

The writer feels that the results of this study support the use of instructional systems in education. It appears that the systems approach could be adapted to all areas of industrial arts, and as the data indicated, it is possible to have quality education with relatively low, individual, instructor input time. The effects that an instuctional system can have in education can only be felt if the approach is initiated.

The attributes of individualized instruction packets have been common knowledge for many years. Adding this approach to an individual study carrel seems to create an unbeatable combination in the form of a total instructional system.

Recommendations

A study such as this could be conducted during a semester when Graphic Arts classes would be available to test the system. Results from such an evaluation would be helpful in upgrading the efficiency and effectiveness of the total system. It must be remembered that an instructional

system is not the cure-all in education that everyone is looking for. The system must be the product of a continuous evaluation process. The instructor must constantly be aware that the system was designed to meet the needs of the individual student, and when it fails to meet that requirement, it is no longer an effective means of education.

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APPENDICES

APPENDIX A

SUSTAINED-SPEED PARAGRAPH *(2 copies / si 1.09)*

2-Min. Writings

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

[For use of scales, review page 26.]

0	If you were to hear a fast typist at work, one of	10
5	the things that you would note would be the sound	20
10	of his work. It has a steady flow, with many ups	30
15	and downs; it is not an even jog trot. Each time	40
20	he comes to a short word or a group of strokes he	50
25	has typed many times, his fingers flash the group	60
30	of letters in a spurt, with no spelling. When he	70
35	comes to a long word or a hard one, he slows down	80
40	and spells out the letters. If you would like to	90
45	build speed, learn to flash all the common words.	100

Plus 1 | 2 | 3 | 4 | 5

Figure 1

TYPING SPEED TEST

Taken from: College Typing, by William M. Cook, p. 51.

APPENDIX B

LAP I

LAP I

SETTING UP AND ADJUSTING THE IBM SELECTRIC COMPOSER

General Instructions

The first few pages of this LAP contain directions which pertain to the proper use of this instructional system. The IBM Selectric Composer instructional system consists of Learning Activity Packages, the IBM Composer, a study carrel, and some instructional materials that are prepared by the IBM Company. As you use the system, be sure to follow all directions completely. Each Learning Activity Package is based on one or more sets of skills and/or bodies of knowledge that is relative to operation of the Composer. We ask that you do not put any marks in the LAP's or the IBM prepared materials as others will use these same materials when they go through the system.

LAP's I, II, and III provide you with all the basic information necessary to utilize the Composer. LAP IV deals with advanced copy production techniques, and it is correlated with the IBM Instruction Manual and the IBM Instruction Manual Supplement. The Learning Activity Packages in this instructional system are titled as follows:

LAP	I	Setting Up and Adjusting the IBM Composer
LAP	II	Copy Production Techniques Using the IBM Composer
LAP	III	Justification Procedures Using the IBM Composer
LAP	IV	Centering Procedures and Advanced Copy Production Techniques

Each LAP contains a self-corrected pre-test, instructional materials, lab exercises, and a final test that are coordinated with the instructional activities conducted in the carrel. The instructional material found in the LAP's is correlated with a series of illustrations found on each page. The LAP's also contain a lab section found in the back of the package. You will be instructed to complete the Lab Exercises from this section as you proceed through the LAP. Lab exercises that require actual typing or copy production are printed on mimeographed sheets that will be supplied to you when you begin each package. The LAP's are designed so that students can complete the packages with only limited assistance from the instructor.

Begin the instructional system with LAP I. Read the Rationale and Behavioral Objectives to become familiar with the goals of LAP I. If you feel you already meet the objectives as stated, take the pre-test that is on page 4. If you score 80% or above on any pre-test, proceed to the next LAP in sequence. If you are not sure how to proceed, ask your instructor for assistance.

Safety

There is little to worry about when using this system in regard to safety. Remember that the IBM Composer is a delicate piece of machinery. Do NOT attempt to make adjustments without first having completed the proper instructional material. NEVER use force to make an adjustment; check with the instructor for help.

Rationale

In order to properly operate the IBM Selectric Composer, you must understand the type element concept. LAP I will introduce you to this concept and give you the background material necessary to successfully perform make-ready adjustments on the Composer. Read the Behavioral Objectives below which outline the goals of this LAP.

Behavioral Objectives

Upon completion of LAP I, you will be able to:

1. Choose any type element and properly adjust the Composer for use with that element.
2. Demonstrate a working knowledge of the leading dial, escapement lever, lock lever, margin sets, and impression control adjustments.

If you feel that you already have a working knowledge of the goals stated in the above objectives, proceed to the pre-test. If you have some doubts, or no background in this area, proceed to the instructional portion of the LAP, which follows the pre-test.

PRE-TEST

Fill in the Blank

1. Various type styles used in the Composer are found on type _____.

2. The number (11) eleven on the top of a type element indicates that the element contains _____/_____ type. (two words)

3. The letter "B" on the top of the type element indicates that the type on the ball is _____.

4. The adjustment that provides space between typed lines is called the _____/_____.

5. The adjustment that provides the proper letter spacing is called the _____/_____.

True-False (T or F)

__ 6. The margin sets can both be set on half or full pica settings?

__ 7. The lock lever is another name for the paper release?

__ 8. The IBM Composer is versatile, but is often limited because of its long set-up time?

__ 9. An impression control setting of one (1), is a lighter setting than six (6)?

__ 10. The colored arrows on the top of type elements indicate proper leading dial settings?

This is a self corrected test. For answers to the Pre-Test for LAP I, turn to page 10 in this LAP.

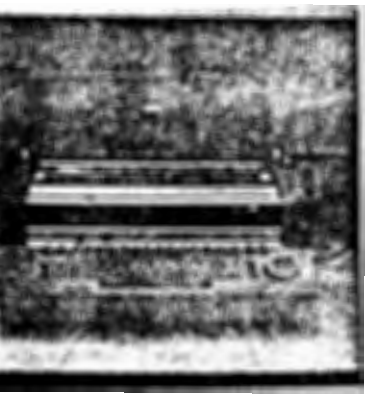


Figure 1

BACKGROUND

The Selectric Composer is a modern and efficient method of cold type composition. The versatility of this machine enables you to produce copy with many styles, sizes, and weights by changing the type element.

Figure 2

LAP I will introduce you to the element concept and it will give you basic information about adjustments that must be made when elements are interchanged. Figure 2 shows you one type element.

Figure 3

At this time locate the type element storage box in the study carrel. You can see that each type element contains a different size and shape of type. Carefully remove one element from the storage box. If these elements are dropped they are easily damaged, so, HANDLE WITH CARE.

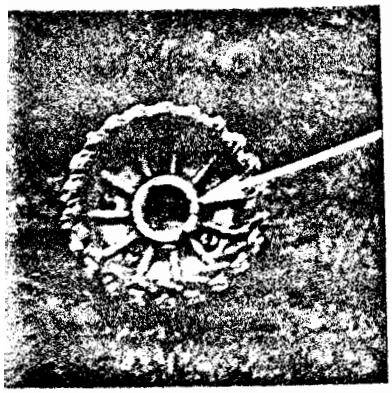


Figure 4

Note that the element is a hollow sphere as shown in Figure 4. Look inside the element you have chosen and you will see a cylindrical portion that is indicated by the arrow in Figure 4. This cylinder slides over the Carrier Post. The carrier post will be described in detail in subsequent LAP's.

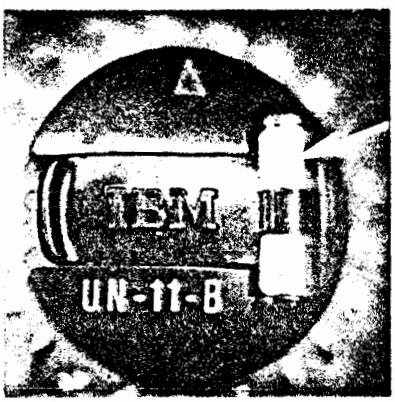


Figure 5

Locate the Lock Lever which is found on the top of the type element. See Figure 5. Hold the element in your hand so the letters IBM are right-reading. Note that the letters IBM are embossed on a small lever that is hinged on the right side of the element, to the right of the letter "M". Open the lock lever about 90° and you will see it catches in an open position. Now, close the lock lever and note how it snaps shut.

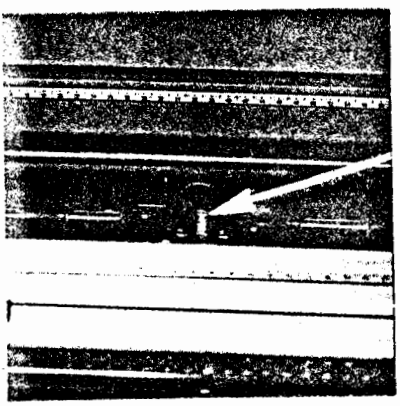


Figure 6

The arrow in Figure 6 is pointing to the carrier post which was mentioned in paragraph 4. Open the lock lever and slip the element over the carrier post. Be sure the Composer is not in the shift position at this time. The letters (IBM) should always be right-reading when the element is placed over the carrier post.

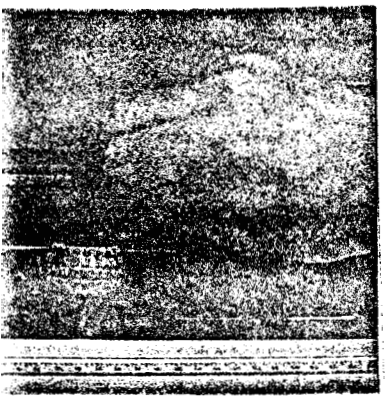


Figure 7

To remove the element from the Composer, open the lock lever and lift up on the element, using the lever as a handle. The procedure is the same for installing all elements on the carrier post regardless of the type that is found on the ball. See Figure 7.

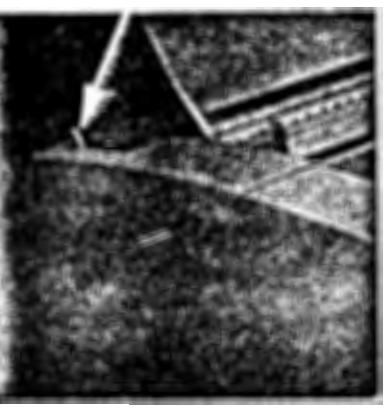


Figure 8

Open the element storage box and look at the symbols found on the top of each element. Each color represents a series of type sizes. Note the Escapement Lever pictures in Figure 8 has three settings that are also marked with colored arrows that correspond to the markings on the top of the elements.

Figure 9

If you place an element in the Composer that has a yellow triangular arrow, then you immediately set the escapement lever setting to yellow. When you move the escapement lever you will be able to feel the lever click in position. The escapement lever setting determines how far the carrier moves as each character is typed, and it varies the amount of space between each letter in a word.

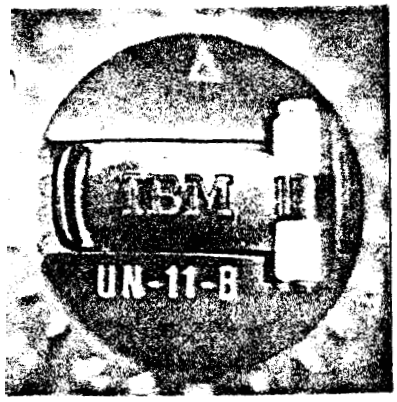


Figure 10

The top of the element also contains a coded series of letters and numbers. See Figure 9. The first letters denote type family, the number in the middle indicates type size, and the last letter tells type weight. The number also signifies Leading dial setting. Locate the leading dial on the right side of the Composer. See Figure 10.

Figure 11

Place an element in the Composer. Set the escapement lever and leading dial. Fig. 11 shows the leading dial. Set the number on the dial opposite the raised notch on the Composer housing. The Composer will automatically space the correct amount between lines when the leading dial is properly set. Increasing the leading dial setting increases the space between lines.

Figure 12

There are two Margin Sets located above the keyboard on the Composer. See Fig. 12. The left margin can be set on any whole pica setting while the right margin set can be positioned on either whole or half-pica sets. Each division on the scale is $\frac{1}{2}$ pica. The pica measuring system will be discussed in subsequent LAP's.

Figure 13

The correct margin setting is determined by the length of the line you wish to compose. To change the settings there is only one rule you must remember. When you set the left margin, the carrier should be all the way to the right, (use the tab key to move the carrier to the right) and when you set the right margin, the carrier should always be to the left (use the return key). To change the margin sets, push in and slide the sets either right or left. The right margin set is coordinated with a bell that rings 3/4" before the end of the line. Figure 13 shows a left margin set of 10 picas.

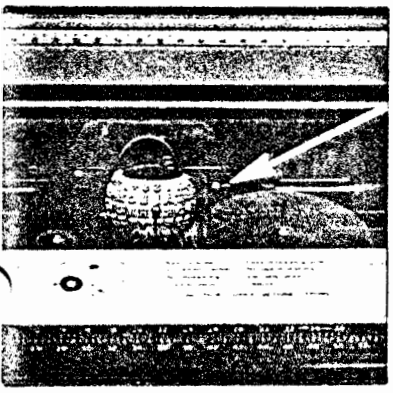


Figure 14

The Impression Control is located on the right side of the carrier post. This control regulates how hard the element strikes the surface of the paper during composition. Type weights or styles that are light (L) need less impression than type styles that are bold (B). The impression control setting is determined by the designation found on the top of each type element. The letters L, M, and B (light, medium, and bold) indicate correct impression control settings. No. 1 is the lightest setting, while No. 6 is the heaviest. For example, if the element is light, your impression setting would usually be 1 or 2, and if it were bold, you impression setting would be 5 or 6.

At this time review any areas that were discussed that you feel are vague or unclear to you. If you still have a question or if some point needs further clarification, ask the instructor for assistance.

Upon completion of this review, proceed to the Post-Test which is found on the following page.

ANSWERS TO LAP I PRE-TEST

1. elements
2. eleven point
3. Bold
4. leading dial
5. escapement lever
6. false
7. false
8. false
9. true
10. false

POST-TEST LAP I

Fill in the Blank

1. The IBM Composer uses the _____ concept of copy production.

2. The element is placed over the _____/_____ and the lock lever is closed to begin copy production.

3. The escapement lever varies the _____ between the letters in a word.

4. The _____/_____ varies the amount of space between the lines of copy.

5. The _____/_____ are used to adjust the length of line that is desired.

True-False

6. The impression control determines how hard the element strikes the surface of the paper?

7. An impression control setting of 6 is the lightest setting that the Composer offers?

8. The IBM Composer provides an effective method of cold-type composition?

9. The Composer should be in the shift position when the type element is placed on the carrier post?

10. The carrier post should be on the right when you are setting the right margin?

At this time turn to page 12 and correct the Post-Test. Look up all questions you have missed to determine why your answer was incorrect. This will also help to refresh your memory in areas in which you are weak.

ANSWERS TO POST-TEST LAP I

1. element
2. carrier post
3. space
4. leading dial
5. margin sets
6. true
7. false
8. false
9. false
10. false

APPENDIX C

LAP II

LAP II

COPY PRODUCTION TECHNIQUES
USING THE IBM COMPOSER

General Instructions

The first few pages of this LAP are concerned with directions, rationale, behavioral objects, and pre-test for LAP II. Follow these items in sequence, do not skip directly to the pre-test. If you have any questions concerning the sequence of the LAP's, refer to the General Information section of LAP I. At this time read the rationale for LAP II.

Rationale

Now that you have a basic understanding of the type element concept, and have developed a working knowledge of the basic machine adjustments, you are ready to begin copy production. LAP II will familiarize you with basic operation procedures for copy production. LAP II will also introduce you to many machine adjustments that will be helpful in later copy production. Read the Behavioral Objectives below, which outline the goals of LAP II.

Behavioral Objectives

Upon Completion of LAP II, you will be able to:

1. Demonstrate a working knowledge of the paper release, the paper bail, the index key, the platen knobs, the zero index lever, the ribbon-lift control, and the on-off controls.

2. Demonstrate through exercises, correct use of the tab controls, the backspace keys, the card holder alignment aids, the space bar, and paper scale.

Proceed to either the pre-test or the background material.

PRE-TEST

Fill in the blank:

1. The _____key is used to feed paper into the Composer.

2. The _____ _____ (two words) is used as your primary alignment aid.

3. Technically, the carrier includes the ribbon, the ribbon spools, and the _____.

4. The _____ (three words) is used to return the carrier to the left margin without advancing the paper.

5. The space bar gives _____units of space for each depression, when it is in its normal position.

True-False

_____ 6. The ribbon-lift control is used when you do not want an impression to be visible on the paper.

_____ 7. The underscore on the Composer is found on the same key as the hyphen.

_____ 8. The platen knobs are divided into increments of $\frac{1}{2}$ pica.

_____ 9. The cent sign can be made with the depression of one key, if you know the mechanics behind it.

_____10. The vertical alignment guides are used for vertical alignment.

This is a self-corrected test. For answers to the Pre-Test for LAP II, turn to page 18 in this LAP.

Figure 1

BACKGROUND

The On-Off Control is located on the right side of the keyboard. See Figure 1. Turn on the Composer and notethe red portion of the on-off key that becomes exposed. This is a reminder to you that the Composer has been left running. Be Sure the Composer is always turned OFF after use.

Figure 2

Tilt the cover of the Composer up and feed a blank piece of paper into the Composer by pressing the Index Key (see arrow in Figure 2 for location). Using the index key is the fastest method of feeding paper into the Composer. The platen knobs are calibrated in such small increments that it is not practical to use them as paper feeds. Remove the blank sheet from the Composer.

At this time remove Lab Exercise I from the LAP. Pull the Paper Release Lever forward (see Fig. 3) and insert the lab sheet in back of the platen. As the paper reaches bottom, push the paper release lever back. The paper is now caught in the paper grippers. Turn on the Composer and depress the index key to feed the paper.

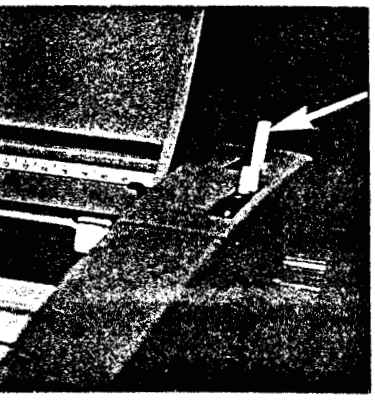
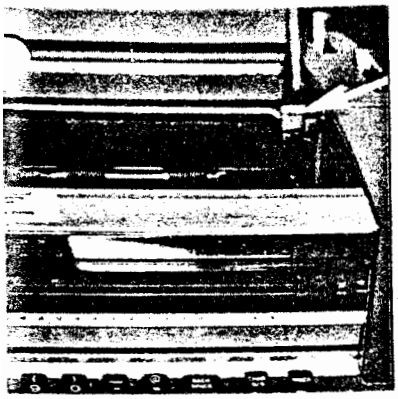


Figure 3



When you pushed the paper release lever back you may have noticed that the Paper Bail remained in the forward. This facilitates paper feed. After the paper is in place, push the paper bail back to its normal position. At this time complete Lab Exercise I.

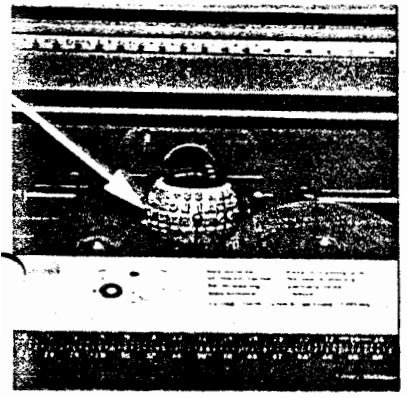


Figure 5

The Carrier is the mechanism that moves back and forth across the carriage, carrying the type element. See Figure 5 for carrier location. Technically, the carrier includes the element, the ribbon, and the ribbon spools. The carrier post that we spoke of earlier is located in the center of the carrier.

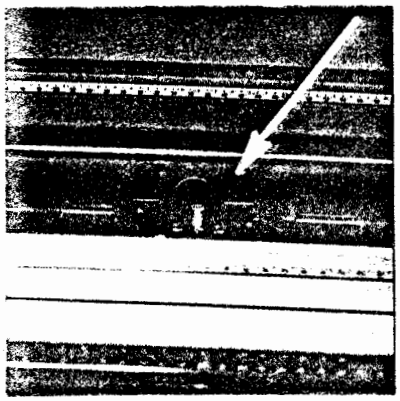


Figure 6

As you typed Lab I, you probably had some difficulty placing the copy on the blank line. The Card Holder (See Figure 6) contains many alignment aids. The card holder is marked with various lines that help indicate the approximate printing point of the element.

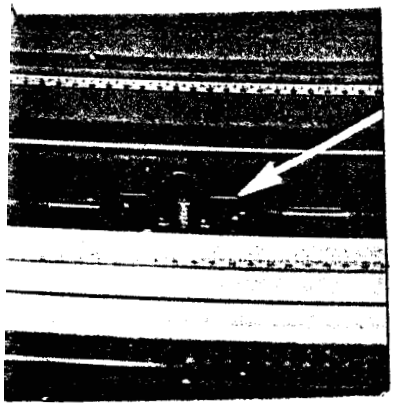


Figure 7

The horizontal guide line on the card holder is used to determine vertical paper alignment. The arrow in Figure 7 shows the horizontal alignment guide in position indicating the location of the typed line. The printed copy appears to sit on the horizontal guide line.

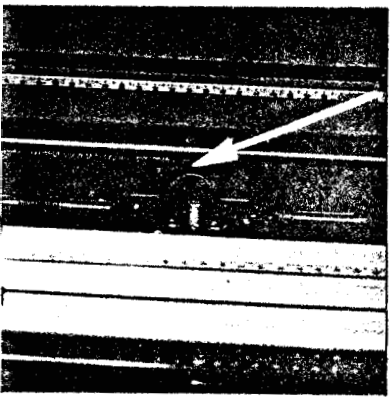


Figure 8

The short vertical marking in the top center position (See Figure 8) locates the right edge of the character that has just been typed. If you slide the card holder to the right the long vertical line will indicate almost the exact right edge of the previously typed character. Complete Lab II.

Figure 9

The two Backspace Keys that are found on the Composer are pictured in Figure 9. The one on the right is the Character Backspace (Char B/S) and the one on the left is the continuous Backspace. The regular backspace key will move the carrier to the left as long as you continue to depress it.

Figure 10

The character backspace is linked with a memory bank that records the width of each letter that is typed in any given line. The memory bank will automatically move the carrier one character to the left with each depression. The memory is erased whenever the return key is depressed. At this time, complete Lab Exercise III. This lab will help you become familiar with the backspace keys' character width units.

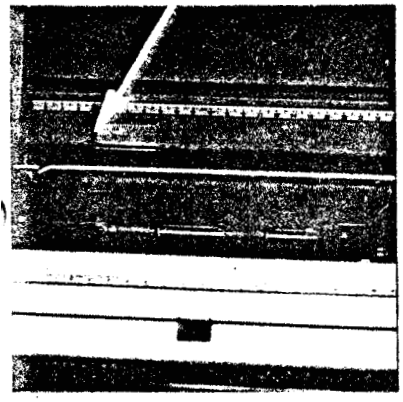


Figure 11

The Paper Scale is located just behind the platen (the horizontal scale just above the arrow in fig. 11 is the paper scale). This scale is directly in line with the margin set scale located just above the keyboard. The paper scale may be adjusted by moving the left margin guide (See arrow in Fig. 11). Practice adjusting the paper margin guide to various paper scale settings.

Figure 12

The Tab Controls are located on the left side of the keyboard. See Figure 12. The tab controls on the IBM Composer operate in the same manner as the ones on a conventional typewriter. The tab may be located at any whole pica setting. To set tabs, depress the top half of the Tab Locate Key identified by the arrow in Figure 12. When the tab locate key is depressed and the tab key is pressed, the carrier will move to the right and stop on all whole pica settings.

Figure 13

Locate the position where you want a tab by pressing the tab key. Depress the Tab Set key. Note the position of the tab set key in Figure 13. The tab locate key automatically returns to normal position as you push the tab set. If you wish to locate another tab, repeat the procedure above. To clear tabs, simply depress Tab Clear Key, which is the top half of the tab set key. At this time complete Lab Exercise IV.

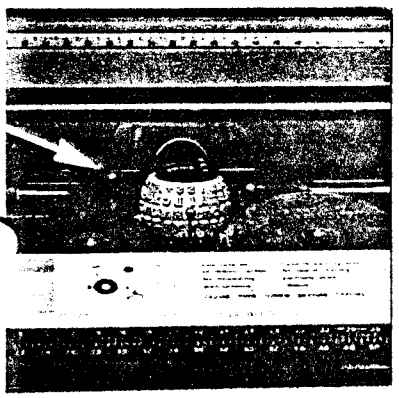


Figure 14

The Ribbon-Lift Control is an alignment aid. If you want to place copy on an exact point and do not want the element to type an image, use the ribbon-lift control. See Figure 14 for location. If you move the ribbon lift to the notch closest the platen, the element will strike the paper, but not the ribbon. A faint impression will be visible on the paper that can be used to determine alignment. Practice using this control by typing a word without the last letter and then relocate the paper to line up the missing letter.

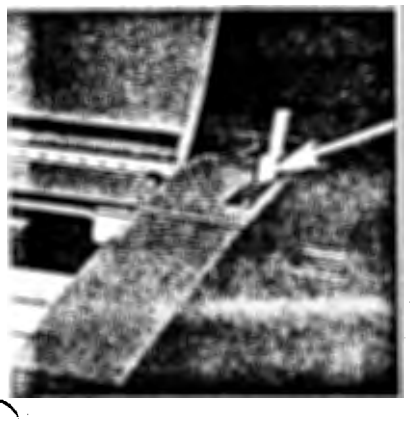


Figure 15

The Zero Index Lever (Figure 15) as the name implies, allows you to return the carrier to the left margin of the line on which you have been typing without line spacing to the next line. To use this key pull the lever forward and depress the return key. The lever is a helpful aid in centering

Figure 16

The Space Bar on your Composer is similar to the one on a conventional typewriter. It is used to space between words. One depression of the bar is the equivalent of three space units. (These units will be discussed in greater detail later.) Use the space bar as you would on any other typewriter. See Figure 16 for location.

Figure 17

The amount of units that the space bar advances the carrier can be increased if desired. Figure 17 shows the Spacing Dial (the inside portion) set on three units of spacing. This accounts for normal spacing. If you increase that setting to six, the result will be six units spacing between words for each depression of the space bar. At this time complete Lab Exercise IV.

Hyphen	-----
Dash	——
Quotation Marks	" "
Cent Sign	¢

Figure 18

There are a few type characters found on the IBM Composer that require special explanation. These characters are discussed in the following paragraphs. Remove Lab Exercise VI from this LAP and complete the exercises using the following paragraphs as your guide.

Hyphen ----------

Tel. No. 266-8138

Social Security No.

479-60-2443

Figure 19

The hyphen key, Figure 19, is used to hyphenate words or as part of number-letter combinations (such as your telephone number). In Lab Exercise ~~IV~~ VI, Parts A and B, show correct use of the hyphen by copying the given exercises.

Dash ----------

A pause -- in thought

Figure 20

The Dash is found on the shift position of the hyphen key. (See Figure 20). Dashes are used when there is a pause of thought or explanation being indicated by the writer. On most typewriters the Underscore is located on this key with the hyphen. Underscores are seldom typed for cold type composition (they are hand ruled) because a high quality line is usually desired.

"Quotation Marks"

Figure 21

Figure 21 shows you the use of quotation marks. The left and right quotation marks are found on the shift position of the comma and the period respectively. To make double quotation marks, press the key twice. At this time, complete Part C of Lab Exercise ~~IV~~ V.

Cent Sign

¢ ¢

Figure 22

The cent sign is not found on any of the Composer's keys. To make a cent sign, type the lower case letter "c", backspace four units and type a slash (found on the shift position of the number "6" key). Complete Part C of Lab Exercise VI. Lab VI will give you practice in composing special characters.

Be sure to shut off the Composer when you are finished using the system. Don't Forget to put the plastic dust cover over the Composer and close the carrel whenerver you are done using the system. Have the instructor lock the study carrel at the close of each class session.

LAB EXERCISE I

A. Type the following keyboard exercises. Use any type element you desire.

1. The IBM Composer uses the type element concept.

---

2. Repeat the sentence above with a different element.

---

3. Use the space below to practice typing other keyboard characters.

LAB EXERCISE II

This lab will help you become familiar with vertical alignment on the Composer. Type the sentences on the appropriate line. You should try to locate the copy about ½ pica above the line. You success in this exercise will be determined by how well you place the copy on the line and in the space provided.

The clear plastic Card Holder contains several alignment aids.

The horizontal lines on the card holder are for vertical alignment.

You should be seated in a normal typing position when making alignments.

LAB EXERCISE III

In the space below type a lower case "i", and then hold down the character backspace key. You will be able to hear the Composer backspace 3 units. It does this because the letter "i" is three units wide. Under the letter "i" you will find a series of other letters. Type each of these letters and depress the character backspace to try to determine how wide each letter is.

	units wide
"i"	_____
M	_____
m	_____
h	_____
w	_____
W	_____
1 (one)	_____
2	_____
5	_____
9	_____

If you have difficulty determining the width, retype the character a number of times if necessary.

After you have completed this exercise, check your answers with the Character Width Chart that is located on the right wall of the study carrel.

LAB EXERCISE IV

Remove this sheet from the LAP and proceed as follows:

Insert this sheet in the Composer with a paper scale setting of 10 (ten). Clear all old tabs from the Composer. Set new tabs on 15, 20, 25, 35, 40, and 45 pica settings. Type the letters T - A - B -- S - E - T, one letter per setting on the following line. Your success in this exercise will be determined by how close you come to the correct tab settings.

Copy the following listing exercise with a paper scale reading of zero and tab settings at 12 and 30 picas. Use the space below the list for your work.

Paper Release Lever	Paper Bail
Backspace Key	Index Key
Character Backspace	Carrier
Carrier Post	Platen Knob
Escapement Lever	Leading Dial
Impression Control	Margin Sets

Use any type element you wish.

LAB EXERCISE V

Retype the following sentence on the blanks provided using appropriate Space Dial settings.

The Space Bar on the IBM Composer is adjustable.

Use a space dial setting of 3.

Use a space dial setting of 5.

Use a space dial setting of 7.

Use a space dial setting of 9.

Use a space dial setting of 4.

LAB EXERCISE VI

Follow the background material in LAP II starting at page 9 for directions on this lab exercise.

A. Hyphen

The self-test in the LAP is designed to help students make a self-evaluation of their knowledge.

B. Hyphen

Type you Social Security No. on the blank below:

_____

Type your telephone no. on the blank below:

_____

C. Quotation Marks

Place quotation marks around the following sentence.

I am the greatest.

Type the titles of two magazine articles you have read using double quotation marks.

_____

_____

D. Cent Sign

Use the space below to practice making cent signs.

At this time review any areas that were discussed that you feel are vague or unclear to you. If you still have a question or if some point needs further clarification, ask the instructor for assistance.

Upon completion of this review, proceed to the Post-Test which is found on the following page.

ANSWERS TO LAP II PRE-TEST

1. Index
2. Card Holder
3. element
4. zero index lever
5. three
6. true
7. false
8. false
9. false
10. false

POST-TEST LAP II

Fill in the Blank

1. The _____/_____/_____ (three words) is pulled forward when you are inserting the paper.

2. The _____/_____ holds the paper against the platen.

3. The carrier includes the element, the ribbon, and the _____/_____.

4. The _____/_____ has both vertical and horizontal alignment aids on it.

5. The _____ /_____key is used to move the carrier one letter to the left.

True-False

6. The paper scale is permanently set for a constant left margin?

7. Tab controls stop the tab at all half-pica settings?

8. The ribbon-lift control is used for heavy impression?

9. The zero index lever accounts for proper line spacing?

10. Double quotation marks are made by two depressions of the same key?

ANSWERS TO POST-TEST LAP II

1. paper release lever
2. paper bail
3. ribbon spools
4. card holder
5. character backspace
6. false
7. false
8. false
9. false
10. true

APPENDIX D

LAP III

LAP III

JUSTIFICATION PROCEDURES USING THE IBM COMPOSER

Rationale

In LAP II you acquired basic knowledge and skills that are necessary to successfully produce copy on the Composer. These skills will serve as the basis for activities you go through in LAP III. One of the primary functions of the IBM Composer is to produce copy that has flush right and left margins. Therefore, LAP III will give you the information that is necessary to successfully produce justified copy. Read the Behavioral Objectives below, which outline the goals of LAP III.

Behavioral Objectives

Upon completion of this LAP, you will be able to:

1. Convert inches to picas and points.
2. Convert points to picas.
3. Demonstrate proper use of leading.
4. Define and demonstrate serial and parallel justification.
5. Demonstrate a working of character width.
6. Demonstrate proper use of all justification features found on the Composer.
7. Complete all lab exercises found in the back of this LAP.

At this time complete the pre-test, or begin with the background material.

PRE-TEST

Fill in the blank:

1. One foot equals _____picas.

2. 72 picas equal _____points.

3. Justification entails _____space between words.

4. The _____dial tells the Composer how many space bar depressions will get extra units.

5. The _____dial tells the Composer how many units to space for each depression of the space bar.

True-False:

____ 6. To automatically justify on the Composer, just set the justification tube to the right setting.

____ 7. 72 picas equal one inch.

____ 8. Type that is set solid is the equivalent of single spacing on a conventional typewriter.

____ 9. Setting 10 on 12 means setting ten point type with twelve point leading.

____10. The Base Line is the line from which justified type is measured.

If you have a score of 80% or above, proceed to LAP IV; if not, begin instructional material beginning on the next page.

Background

In order to understand how justification works on the IBM Composer, you must first become familiar with the printer's measuring system. This may be difficult at first, but it will become second nature to you as you gain experience with the system. A printer's inch is divided into points and picas. See Figure 1.

1" equals 6 picas

1 pica = 12 points

72 points = 1"

Figure 1

Figure 2

As was mentioned earlier, your Composer has measuring scales on it that are divided into picas. Figure 2 shows you a Removable Scale that is located just in front of the carrier. Remove this scale and note that it is calibrated just the same as the line gauges you find throughout the Graphic Arts lab. This clear scale also has half-pica calibrations.

1 pica = 1/6 inch

1 ~~pica~~ inch = 72 points

Figure 3

One pica is the equivalent of 1/6", or six picas equal one inch. Twelve points are equal to one pica, and 72 points equal one inch. You should become familiar with this measuring system as nearly all measuring in Graphic Arts is done in these units. At this time complete Lab Exercise 1.

Horizontal line measurements are usually measured in picas. Horizontal measurements to within ½ pica are considered accurate enough for most copy work. Vertical measurements are done to a finer degree, usually to the nearest point. Figure 4 shows you the relationship between vertical and horizontal measurements.

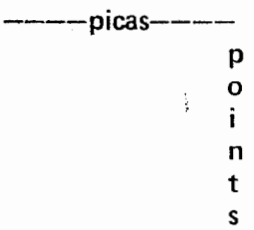


Figure 4

In order to measure copy we must set some guidelines for our measurements. The Base Line is the imaginary line upon which all letters in any given line sit. Any lower case letters (p,y,q,g,j,etc.) that project below the base line are said to have descenders.

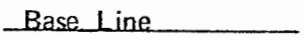


Figure 5

Another imaginary line is drawn across the top of all lower case letters. Any lower case letters (l,k,d,b,etc.) that extend above this line are said to have ascenders. Originally hot type was measured by the point size of the body of the type. In order to avoid confusion, copy produced on your Composer corresponds in size to this old method of measurement.

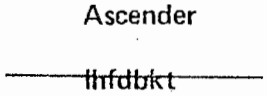


Figure 6

Another important measure of type is Cap Height. This height is determined by measuring the distance between the base line and the top of the capital letter. Cap height is used quite often in centering copy which is in caps. Figure 7 shows you the guidelines that are used when measuring cap height.

Figure 7

Vertical line spacing measurements become important when you want to set copy within a given area. Vertical line spacing can be compared with setting a regular typewriter to single or double spacing. Figure 8 shows type that is "set solid". Setting type solid is the equivalent of single spacing on a typewriter.

This is a sample of type that is set solid. The sample here uses 11 point type.

Figure 8

Typesetter's terminology for space between lines is Leading (pronounced ledding). When you increase the white space between sentences in a paragraph, you are increasing the leading. Figure 9 shows the same copy as Fig. 8, except it is set with (2) points leading between lines.

This is a sample of type set with two point leading. This is eleven point type.

Figure 9

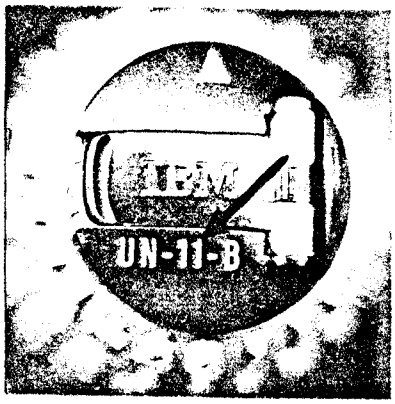


Figure 10

Remember that Fig. 8 shows type that is set solid. To produce the same copy with 2 point leading shown in Fig. 9, we increased the leading dial setting by 2 points. Fig. 10 shows the type element with an arrow on the point size. Any leading dial setting above the number indicated on the element will produce extra white space between lines.

This is a sample of type set with three points leading. It is called 11 on 14.

Figure 11

The copy in Figure 11 is eleven point type. There is 3 point leading between lines. The typographers jargon for copy set in this manner is "setting eleven on fourteen" (11 on 14). In other words you are setting eleven point type with three points leading, hence 11 on 14.

This is a sample of 10 point type set with two points leading. This is setting 10 on 12.

Figure 12

The sample in Figure 12 is 10 point type with 2 point leading. This is called setting 10 on 12. In this case the copy is ten point type with two points leading between lines. At this time complete Lab Exercise II in this LAP. Be sure to follow all directions completely.

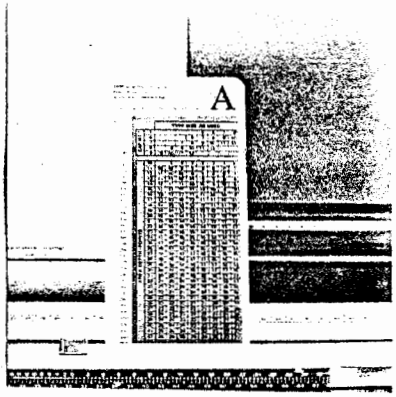


Figure 13

A point ruler has been provided in the study carrel; it is standard equipment with each Composer. It is actually a combination ruler and centering chart. The left edge of the card is the point ruler. The centering chart will be discussed ~~in~~ later. You can use this ruler when making vertical measurements.

In order to understand the justification procedures we use on the Composer, we must first become familiar with the mathematics the Composer uses. All the characters on the keyboard have an exact width. This width measurement is expressed in units. Figure 14 shows two letters and their width expressed in units.

M 9 units wide

h 6 units wide

Figure 14

No matter what point size type you are using, the various characters you produce are always expressed as being the same number of units wide (all letters are proportionally the same size despite the type size). Figure 15 shows a lower case "w" in three different point sizes. Each sample "w" is exactly eight units wide.

w w **W**

all three of these lower case "w's" are eight units wide

Figure 15

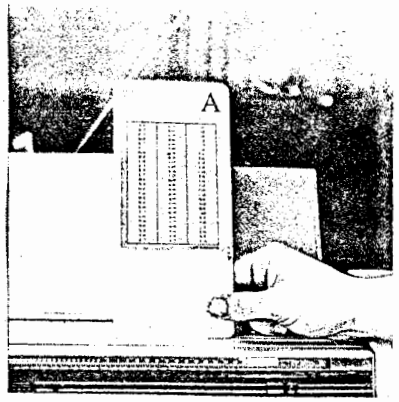


Figure 16

Find the Character Value Card in the carrel. This card lists the various keyboard characters with their corresponding units of width. On the card you can see that all characters range from three to nine units in width. Notice that all numbers are the same width. This is to aid in copy production where you must make numbered lists, etc.

Blue = 16 units/pica

Yellow = 14 units /pica

Red = 12 units/pica

Figure 17

The units per pica vary according to the size of the type you are using. The elements coded yellow have 14 units per pica; blue - 16 units per pica; red - 12 units per pica. You can always mathematically calculate the exact width of any letter, word, or sentence.

This is a sample of copy that has been justified to a line that is ten picas long. This sample is set 11 on 12.

Figure 18

Simply stated, justifying copy means typing copy so the left and right margins are straight. This is the same process that is used in newspapers, magazines, and books to make their text have flush right and left margins. Justifying involves adding extra space between words to spread the lines out to the desired length.

This sample of justified copy is made with eight point type. It is set eight on twleve. Therefore, it has four points leading.

Figure 19

The Composer makes justifying easy because the machine spreads the words automatically. To justify copy, you type all copy twice. The first typing measures the amount of spacing needed and the second typing is the final copy. Figure 19 shows a sample of justified copy.

Figure 20

The Justification Tube and Window (Fig. 20) measure the line to determine the necessary spacing. The colored triangle indicated by the arrow in Figure 20 shows the color code marking that corresponds to the type element you are using. To adjust the tube to the appropriate setting, grasp the tube along the smooth portion and turn it until it clicks into place.

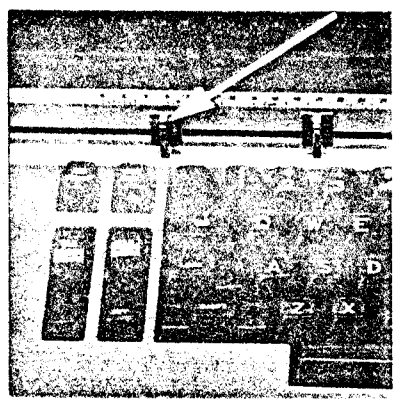


Figure 21

The first step in the justification process is determing the length of line you desire. Set the margin sets to that chosen length. All your rough copy (first typing) will be typed between these margin settings. Figure 21 shows margin settings for a 14 point line.

Figure 22

When you change the justification tube setting, you should always reset the scale in the tube. When resetting this scale, the carrier should be resting on the right margin. The white line on the left edge of the window should read exactly zero. To locate the exact right margin, use the tab locate and tab keys.

Figure 23

To adjust the justification tube, grasp it on the knurled ring on the right side of the tube. Turn the tube casing until the white line registers exactly zero. Remember to check this setting whenever you begin doing any justification work. Figure 23 shows the justification tube correctly zeroed in.

Copy that is justified in parallel, is typed first in rough form.

Figure 24

For much of the justification work that you do, both the rough and final copy will appear on the same sheet. This is called parallel justification. When using this method you will want to make a tab setting to the right of the right margin. All final copy will begin with a left margin that is located on that tab setting.

Figure 25

Be sure that your tab setting to the right of the margin setting leaves enough room for the final copy to be typed. Five to ten picas beyond the right margin set is usually sufficient. Be sure to clear all old tabs before beginning your work. If you have any questions concerning tab or margin sets, refer to LAP II.

Figure 26

To make the justification tube engage, pull down the Justification Lever (see Fig. 26). When you pull the justification lever down it will hold in place, engaging the tube. You may notice that as you pull the lever down the center of the spacing dial points to the number 3. The "3" corresponds to three units space given by one depression of the space bar.

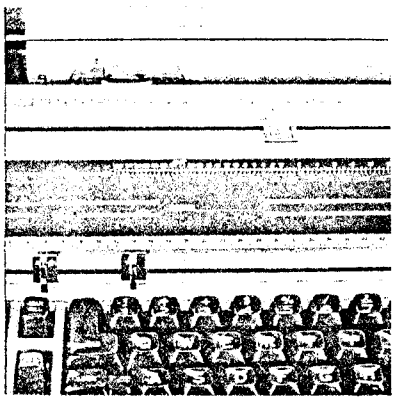


Figure 27

When you type rough copy, always stop short of the right margin. A bell will warn you when you are getting close to the margin. As you approach the right margin you will notice a series of colors move across the window. These colors along with the numbers on the tube window indicate the amount of spacing that is required. To gain a better understanding of this procedure, complete Lab Exercise III.

Serial justification means typing all rough copy, then retyping all final copy at one time.

Serial justification is a method that involves typing all rough copy first, and then all finished copy. This method entails making a written note of the justification tube readings for each line as you type it. As you retype the final copy, you make the appropriate setting for each line as dictated by the written notes you made earlier. Figure 28 shows a sample of this technique.

Figure 28

Figure 29

The justification tube actually measures the distance the copy is from the right margin. The justification dial spaces the words the amount that you set. Remember that the justification lever must always be pulled down if the tube is to yield the proper readings.

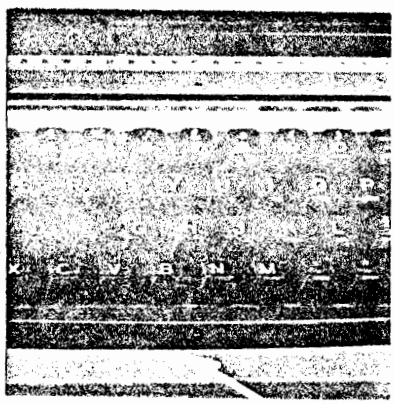


Figure 30

The space bar allow three units space for each depression. The justification dial allows you to vary that space to any degree up to nine units per depression. If a line is five units short, the Composer will add one extra space between each of the first six words in the line, thus spacing the line out to the proper length.

The next three paragraphs are quoted from the IBM Selectric Composer Instruction Manual, pages 24-25.

The mathematics of this procedure is done automatically by your composer. When you pull down the Justification Lever to do the rough copy, you are telling the machine to count the number of space bar strokes in the line. You can see the number of spaces register in the tiny window at the right of the justification tube as you type. In addition, the machine determines the number of units you have stopped short of the margin. It divides this number by the number of space bar strokes in the line and adds these extra units to the basic three units per space between words. The "answer" is given when you read the justification window scale.

Thus, when you set the justification dial to type the line the second time you are telling the machine how may spaces to make for how many units. The number on the colored wedges of the inner dial represents the value of the space bar, so we call this portion the Value Dial. In regular typing position, the inner knob points to three. When you adjust this knob for blue you have changed the value of space from three units to four units for each depression of the space bar; when the value dial is set for orange, each space is worth five units, etc.

Setting the outer dial tells the Composer how many spaces you want at a given value--so we call this portion of the justification dial the Quantity Dial. If the value dial is set for blue and the quantity dial for six, you will get six, four-

unit spaces. The rest will be three-unit spaces. As you type, you can see the quantity dial jump down one number with each space. When it reaches zero--meaning no more spaces at that value--the value dial also jumps to the next lower value and remains there for the rest of that line.

At this time complete Lab Exercise IV.

Remember that appearance of rough copy is not important, If you lost your place or make an error, you can use the zero indes lever to return to the beginning of the line again. Type right over your mistakes and the justification tube will measure only the last typing.

After completing the exercises and background material in LAP III you should have a basic understanding of justification procedures on the IBM Composer. LAP V deals with special justification techniques that occasionally occur during copy production. If you feel there are some techniques that were not covered in LAP III that you need to complete some work at this time, you may elect to complete LAP V before LAP IV. The information in LAP IV deals with various centering techniques used in copy production. If you have no pressing nedd for the information in LAP V it suggested that you complete LAP IV first. The information in these two LAP's is not sequential.

LAB EXERCISE I

Use your Removable Scale to measure the following lines. Record the measurement in picas and then convert the pica readings into equivalent point readings.

A.

	Sample Lines	Picas	Points
1.	_____		
2.	_____		
3.	_____		
4.	_____		
5.	_____		

B. Convert the following inch measurements to picas and points.

	Sample	Picas	Points
1.	3 inches		
2.	5 inches		
3.	12 inches		
4.	10 inches		
5.	7 inches		

c. Convert the following pica measurements to points.

	Sample	Points
1.	5 picas	
2.	6 picas	
3.	11 picas	
4.	$4\frac{1}{2}$ picas	
5.	$7\frac{1}{2}$ picas	

LAB EXERCISE II

Choose a ten point type element and set the following paragraph 10 on 12 and 10 on 14. Do not be concerned with the length of the lines. Type the copy approximately 30 picas long and try to center the copy on the page.

Leading is the typesetter's term for extra white space between lines of type. If no extra white space is inserted, the type is said to be "set solid." However, extra white space gives a better appearance and increases readability, so leading is usually added. The amount of leading used is a matter of personal preference and the requirements of the job at hand. It varies with style of type you are using and the amount of copy you have to fit on a page.

A. Setting the above paragraph 10 on 12.

B. Setting the above paragraph 10 on 14.

LAB EXERCISE III

The following exercise is taken from the IBM Instruction Manual Supplement, pages 8-9.

1. Insert the lab sheet found on the next page, so the left edge is at zero.
2. Set margins for 6 and 24.
3. Clear all tabs, and set new ones at 26 and 29: Depress tab locate and flick the tab key repeatedly until the carrier is resting at 26. Depress tab set. Repeat process for 29.
4. Use 11 or 12 point type (an element with a red triangle)
5. Move escapement lever to the red setting.
6. Set leading dial for 13 or 14.
7. Set impression control for 3.
8. Rotate the justification tube so the red triangle show on the band at the left. You can feel the tube click into position.
9. Using tab locate, position carrier at the right margin (24). Turn band on the right of justification tube to line up the white line in the justification window with the zero mark on the scale. Arrows at right of tube well you direction to turn knurled band.
10. Return carrier.
11. Bring justification lever down.
12. Type first line, listen for the bell, and notice how the colors move to the left side of the justification window. End line close to--but not beyond-- the right margin. Do not space after the last word.
13. Read the color at the left of the scale (blue) and number of the scale (6) where the blue ends. If color does not end exactly on a white line, adjust the tube again so the color does end on a scale marking.
14. Tab and record scale reading (b6).
15. Set inner knob of justification dial on blue. Set outer dial on 6.
16. Tab and type line again.
17. Return carrier. Repeat steps 11 through 16 for the rest of the copy.

Some Reminders:

1. Once you have adjusted the band on the tube so the color ends exactly on a scale marking, do not change it again on a subsequent line.
2. When more than one color appears in the window, you are concerned with the one at the extreme left.
3. Use the Character Backspace key if you make a typographical error on your rough copy.
4. Use the line on the card holder if you need to check your position on the writing line.

Justify the following paragraph. The correct justification readings are found in the columne on the right. Your readings should be the same as these.

The ability to justify copy easily and quickly	b6
is one of the distinct advantages of your new	b7
Composer. By merely typing copy once, tak-	o1
ing a reading from the Justification Window,	o2
then setting the Justification Dial, copy is	w3
automatically aligned at the right margin as	g2
it is typed a second time.	

Type the above paragraph set solid.

Type the above paragraph with three points leading.

LAB EXERCISE IV

The following exercise is taken from the IBM Instriction Manual Supplement, pages 10-11.

Use the same machine adjustments as those for the last exercise. Use the second part of this lab sheet for completing this lab.

"O.K." Lines

1. Pull down justification lever, and type first line as you see it on opposite page.
2. Notice that the line ended exactly on the right margin. (Red carrier position indicator is on the margin and white line in justification window is on zero.)
3. Tab and type line with value dial set on 3 and quantity dial set on "0".
4. See that justification dial is at black.
5. Tab and type line agian, Repeat for a second time.

Backspacing to Hyphenate

1. Type line as you see it, including all of word "justified."
2. Notice that the line was too long, and you have gone beyond the right margin. There is no color left in the justicication window.
3. You obviously must hyphenate the word "justified," so depress character backspace key four time for the last four letters.
4. Type a hyphen. It will print over the letter "f."
5. Put a pencil mark through the last syllable so you will know not to type it in the justified line.
6. Tab and record your scale reading of (o1).
7. Set justification dial for orange 1, tab and type the line.

Backspacing to Delete a Word.

1. Type line as you see it, including the word "they."
2. Notice you have again gone beyond the right margin, but this time you cannot hyphenate the last word; delete it from the line.
3. Depress character backspace key six times: once for each letter in the word "they", once for the space before it, and once for the last letter ("s") of the preceding word ("as").
4. Restrike the "s" to double check accuracy of backspacing and to true up the scale reading.
5. Put a pencil mark through "they" so you will not type it in the justified line.
6. Turn the tube up to take an adjusted scale reading.
7. Tab and record you new reading (o4).
8. Set justification dial for orange 4, tab, and type line again.

Paragraph Ending (Short Line)

1. Complete the paragraph in part 4 of the exercise.
2. If the line is short, as this one is, simply type the final copy with a value dial on black and the quantity dial on zero.

Complete the following exercises in the space beneath each sample. Follow direction from the previous page.

"O.K." Lines
All O.K. lines are lines which end on the right-hand margin. As they end right on the margin,

Backspacing to Hyphenate
all normal spaces between words in the justified

Backspacing to Delete a Word
fied copy should be three units each, just as they

Paragraph Ending (Short Line)
they were in the rough-line copy. Make the justification dial setting black zero.