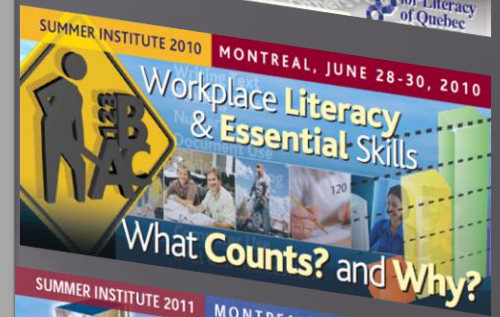
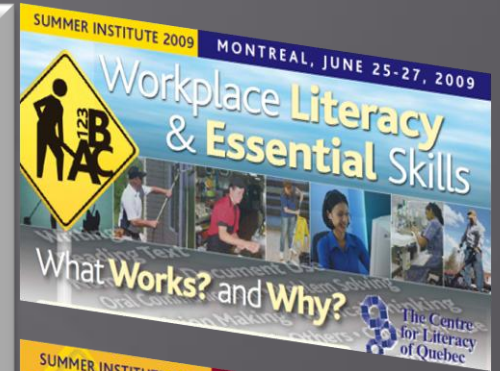


Functional Context  
Education  
and Workplace  
Literacy  
  
Part 2  
  
Tom Sticht  
International Consultant in  
Adult Education



# Functional Context Education and Workplace Literacy

## Schedule

Part 2. 10:45-12:00 Scientific research on FCE and workplace literacy leading to the National Workplace Literacy Program (NWLP) in the United States

.  
12:00-12:30pm Lunch

Part 3. 12:30-02:00 Workplace literacy and workforce development research and programs following the NWLP

02:00-02:15 Break

Part 4. 02:15-03:30 Contemporary projects on contextualizing and integrating program design and engaging employers and employees.

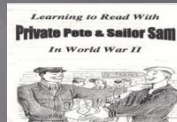
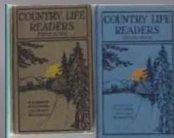
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# Functional Context Education and Workplace Literacy in Scientific Perspective

Two perspectives providing evidence for the efficacy of  
functional policies and practices

Professional Wisdom

Scientific Research  
Leading to the NWLP



# Functional Context Education and Workplace Literacy



## A Contemporary (2010) Concern With Functional Context Education and Workplace Literacy

### Promising Strategies for Involving Employers in Skills Development Efforts

#### *Sectoral Training Programs*

Sectoral training programs are another important strategy for involving employers in skill development. Interest in the sectoral approach is growing across the country, and several new initiatives have emerged in recent years. This strategy focuses on an industry or a small set of industries and develops industry-specific expertise that supports the design and operation of training programs.

WorkFORCE Education and Training

#### *Incumbent Worker Training*

One important strategy for strengthening employer involvement in training for low-skill workers is to improve the design of incumbent worker training programs to reach this population more effectively. This approach generally provides public funds (usually from employer taxes) to individual employers or a consortium of employers to upgrade the skills of current employees or train new hires.

WorkPLACE Education and Training

# Functional Context Education and Workplace Literacy in Scientific Research Perspective

First Generation Scientific Research: 1966 to 1987

1966-75 FCE & Workplace Literacy: The  
Functional Literacy (FLIT) Program  
Workplace Literacy For Transitioning New  
Hires Into Employment



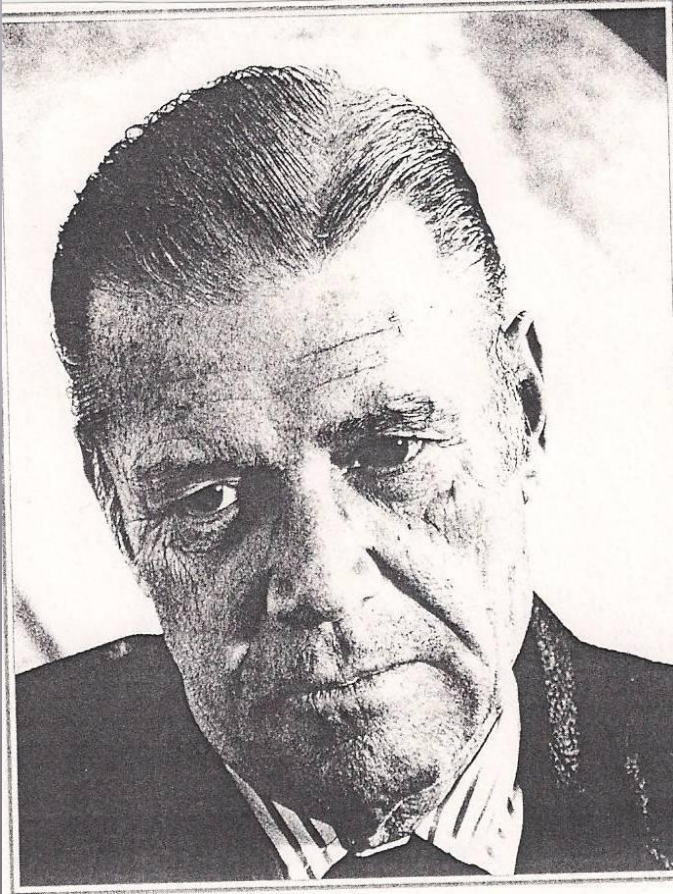
1983-86 FCE & Workplace Literacy: The  
Experimental Functional Skills Program (XFSP)  
Workplace Literacy for Helping Employees Gain  
Upward Mobility in Their Employment



1983-87 FCE & Sectoral Training: Vocational  
English as a Second Language (VESL) Workforce  
education in a community college electronics  
course



# Functional Context Education and Workplace Literacy in Scientific Research Perspective



Robert Strange McNamara

Adult Basic  
Education in the  
United States in The  
War on Poverty of  
the 1960s

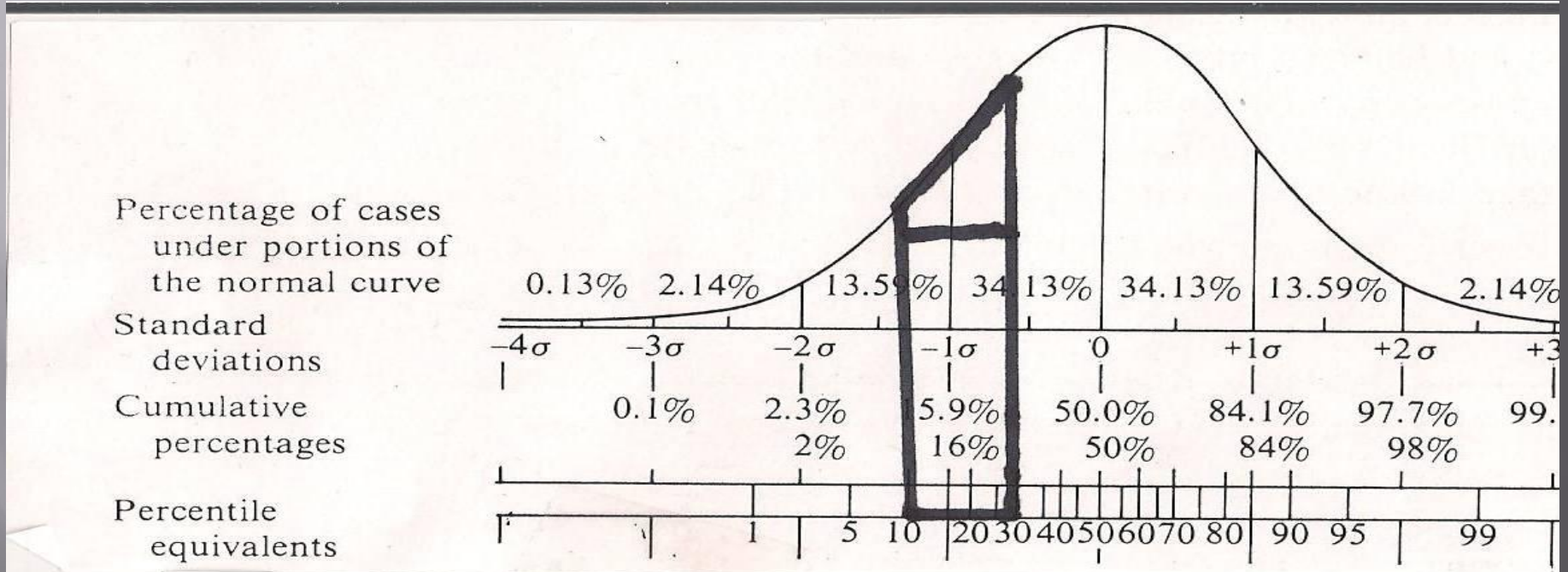
Project 100,000

And

The Functional  
Literacy (FLIT)  
Program

# Fighting the War on Poverty and the War in Vietnam

Project 100,000 men came from the 10<sup>th</sup> to 30<sup>th</sup> percentiles on the AFQT.



## Fighting the War on Poverty and the War in Vietnam

Project 100,000 planning committee made recommendations for how to design instruction for the New Standards men.

### The Military Training "Pipeline"

Basic Military Training → Job Training → Job Station

Project 100,000 Course Revision Recommendations for Training "Pipeline"  
Problems & Cognitive Processes of Motivation, Learning, & Transfer

Course Revision Recommendations	Training "Pipeline" Problems			
	Reduce Attrition	Reduce Recycles	Reduce Training Time	Produce Qualified Personnel
Relate learning to what the person already knows	XX (facilitates learning)	XX		
Identify probable areas of learning difficulty for less educated personnel	XX (facilitates learning)	XX		
Integrate literacy training into job training	XX (facilitates learning)	XX	XX	
Relate learning situations & methods to specific military situations	XX (motivates)		XX	XX (facilitates transfer)
Develop specific course objectives that are job related				XX (facilitates transfer)

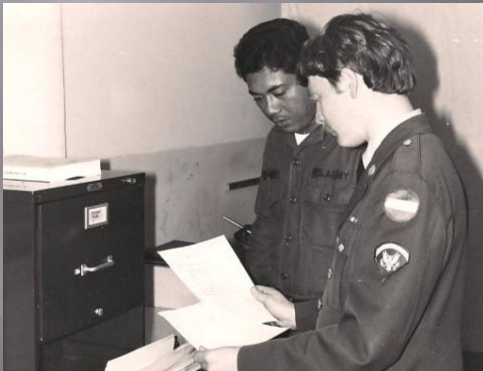


# Functional Context Education and Workplace Literacy in Scientific Perspective

Functional Context Education in  
Workplace Literacy: Research Evidence  
1967-Present



**The U. S. Army's Functional  
Literacy (FLIT) program  
integrating reading skills and  
job skills education and training.  
1967-1976**



# The Functional Literacy R & D Program 1967-1976



- ☺ Job Analysis of Literacy Demands
- ☺ Evaluation of Military Literacy Programs
- ☺ Develop/Implement/Evaluate Integrated (Contextualized/Embedded) Job & Literacy Skills Programs For Six Occupations

# The Functional Literacy R & D Program 1967-1976

## Job Analysis of Literacy Demands



Figure 20

**Repairman Test:  
Wheelbearing Adjustment Problem**



Figure 21

**Cook Test:  
Job Skill Demonstration**

Figure 22

**Armor Crewman Test:  
Arm and Hand Signals**



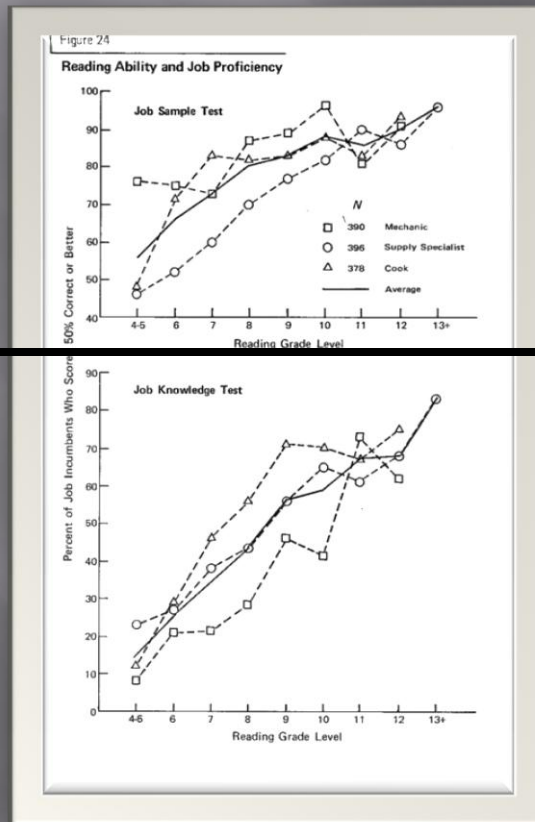
Figure 23

**Supply Specialist Test:  
Set-up for Problem**



# The Functional Literacy R & D Program 1967-1976

## Job Analysis of Literacy Demands



Relationship of reading level to hands-on job sample test performance

Relationship of reading level to paper-and-pencil job knowledge test performance

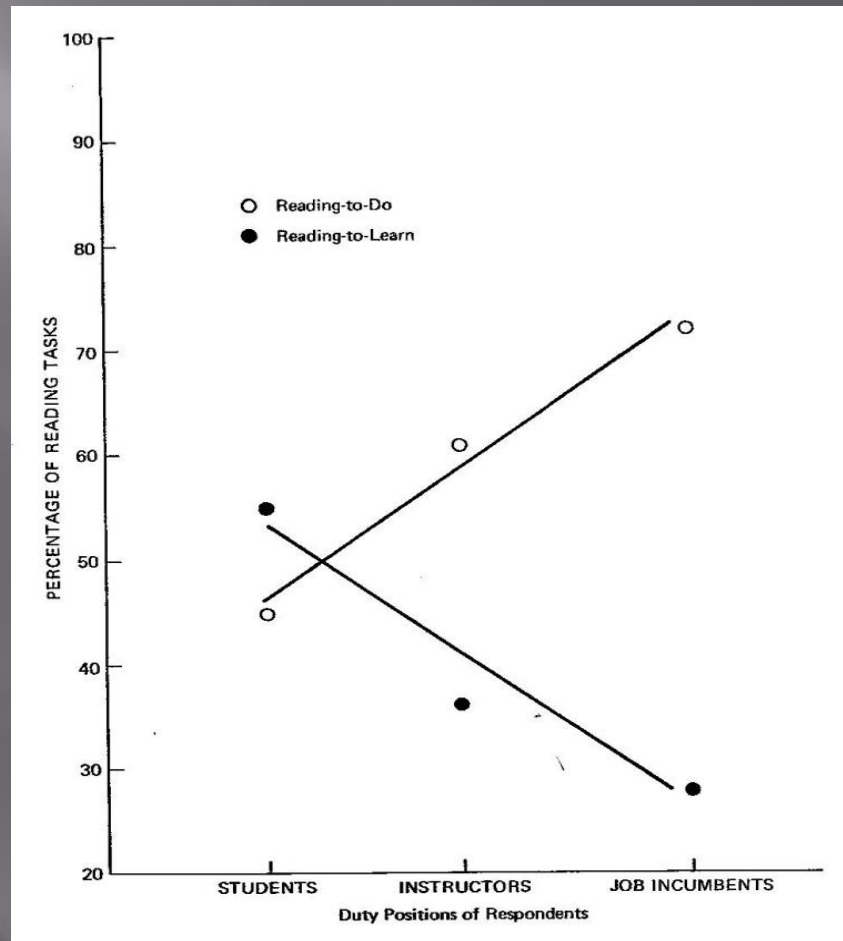
# The Functional Literacy R & D Program 1967-1976

## Job Analysis of Literacy Demands

Analysis of job and job-training reading demands identified reading-to-do and reading-to-learn tasks.

Reading-to-do tasks emphasize short-term, working memory

Reading-to-learn tasks emphasize long-term memory's knowledge base



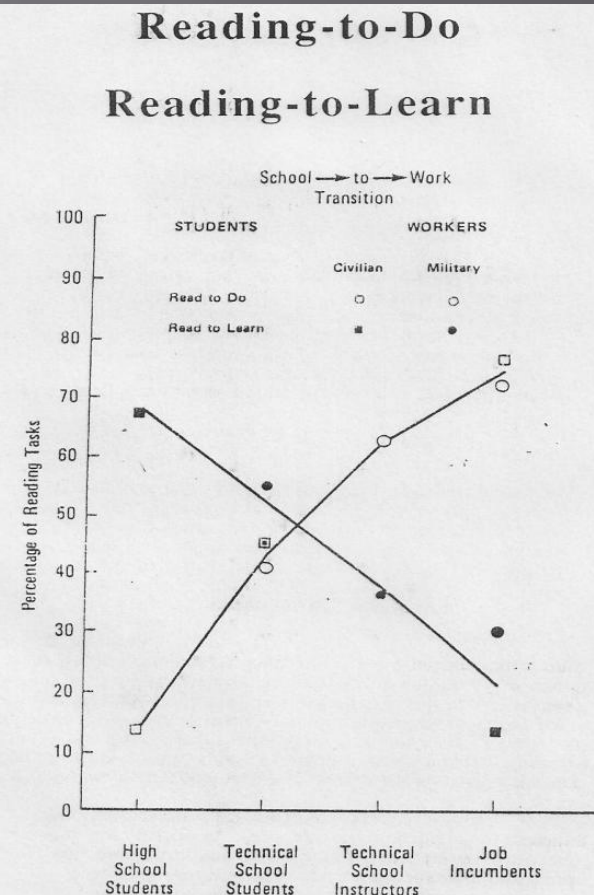
# The Functional Literacy R & D Program 1967-1976

## High school and Job Analysis of Literacy Demands

Analysis of high school and job and job-training reading demands identified reading-to-do and reading-to-learn tasks.

Reading-to-do tasks emphasize short-term, working memory

Reading-to-learn tasks emphasize long-term memory's knowledge base



# The Functional Literacy R & D Program 1967-1976

## Job Analysis of Literacy Demands

### Conclusions from job analyses:

- 😊 Reading strongly related to job performance
- 😊 Job-related reading mostly reading-to-do
- 😊 Job-learning reading includes both reading-to-do and reading-to-learn
- 😊 Grade level targets for jobs range between 7<sup>th</sup> to 9<sup>th</sup> grade

# The Functional Literacy R & D Program 1967-1976

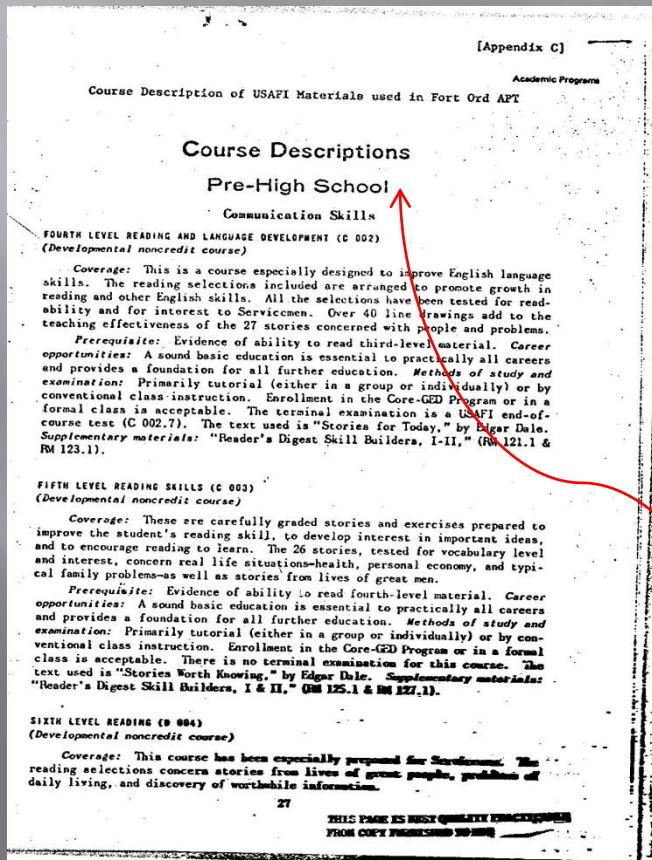
## Evaluation of Army Literacy Programs

### Army Preparatory Training

Goal: 5<sup>th</sup> Grade Reading  
Not Matched to 7-9<sup>th</sup> Grade Levels  
From Job Literacy Analyses

Goal: Improve Job Reading Skills  
Used General Reading Test to Assess  
Reading Gains Not Job-Related  
Reading Tests

Pre-High School Curriculum  
Not Job-Related Curriculum





# The Functional Literacy R & D Program 1967-1976

## Evaluation of Army Literacy Programs

V

Many a great artist's work is produced from the inspiration of his own personal experience. It is said that the opera, *Der Fliegende Hollander*, which translated means *The Flying Dutchman*, was inspired by a stormy voyage across the North Sea taken by the composer, Richard Wagner.

The story itself is based on an old legend concerning a phantom ship. It tells of a Dutch sea captain who is cursed to sail the seas forever unless he can find a woman who loves him to redeem him. After Wagner had completed the libretto he was forced to sell it to secure badly needed funds. A minor composer set the story to music, but his efforts failed miserably. Meanwhile Wagner wrote his own version, finishing it in less than two months. His dramatic, sonorous choruses and arias hauntingly summon up the mysterious, often violent sea. This was the first application of Wagner's famous theory that music could, in itself, tell a story. The unfamiliar musical pattern and the somber theme did not at first endear this opera to the public. It was some time before *The Flying Dutchman* received its well-merited praise. Wagner wrote this opera in one act, but later, for convenience in staging, it was divided into three acts.

1 Wagner tried to make his music —  
[a] tell a story  
[b] express sorrow  
[c] sound strange  
[d] cause happiness

2 The best name for this story is —  
[e] Tales of the Sea  
[f] A Terrible Voyage  
[g] Richard Wagner  
[h] *The Flying Dutchman*

24 The main character in the opera described in the story is —  
[e] a sea captain  
[f] Richard Wagner  
[g] a man who can fly  
[h] a beautiful woman

25 In this story, the word secure means —  
[a] certain  
[b] obtain  
[c] protect  
[d] make fast

Goal: Improve Job  
Reading Skills  
Used General  
Reading Test to  
Assess Reading  
Gains Not Job-  
Related Reading  
Tests

# The Functional Literacy R & D Program 1967-1976

## Evaluation of Army Literacy Programs

### Sample From the Cook's Job Reading Task Test

**INDEX A**

Card No.		Card No.
	Use of combinations Sliced Onions and Green Peppers	A-2
	Messing Procedure	A-3
	Mental Hygiene	A-10
	Recipe Conversion	A-1
	Reconstituting Soup and Gravy	
	Bases	A-12
	Table of Approximate Percentage Waste and Percentage Edible Portion Yield in the Preparation of Fresh Fruits and Vegetables	A-7
	Table of Egg Equivalents	A-6
	Table of Measures for 1 Pound Quantity of Commonly Used Foods	A-6
	Table of Milk Equivalents	A-9
	Table of Weights and Measures	D-23
	Cre. Sats	D-23(1)
	Table of Weight and Measure Equivalents	D-24
	Tomato Juice Conversion	D-24(2)
		D-24(1)
		D-25
		D-25(1)
		D-25(2)
		D-25(3)
		D-26
		D-14(2)
		D-27
		D-28(1)
		D-29(1)
		D-30(1)

**INDEX AND SWEET DOUGHS No. 52**

Card No.		Card No.
	Juice Cocktail	
	Grapefruit and Pineapple	B-1
	Orange and Pineapple	B-2
	Seasoned Tomato	B-3
	Tomato	B-4
	Shrimp Cocktail	
	Signed Fruit Cup	
	Stuffed Cheery	
	Blue Veined Cheese	
	Collage Cheese	
	Collage Cheese and Relish	
	Peanut Butter	
	Cinnamon Fla.	
	Chest Four	
	Characteristics of Ge.	
	Guide for Short-Time	G-16
	Guide for Preparation	G-16(1)
	Guide for Heat Roll No.	G-17
	Ice Cream	G-18
	Meringue	G-19
	Meringue	G-20
	Meringue	G-21
	Meringue	G-22
	Meringue	G-23
	Meringue	G-24
	Meringue	G-25
	Meringue	G-26
	Meringue	G-27
	Meringue	G-28
	Meringue	G-29
	Meringue	G-30
	Meringue	G-31
	Meringue	G-32
	Meringue	G-32(1)

**TEST A**

NAME: \_\_\_\_\_

BELOW IS A LIST OF JOBS. NEXT TO EACH JOB IS A BLANK SPACE FOR YOUR ANSWER. ON THE LEFT SIDE OF THIS BOOKLET IS AN INDEX. YOU ARE TO FIND EACH JOB IN THIS INDEX. WHEN YOU FIND THE JOB IN THE INDEX, YOU WILL SEE A CARD NUMBER TO THE RIGHT OF THE JOB. YOU ARE TO WRITE THIS NUMBER IN THE BLANK SPACE ON THE ANSWER SHEET. NOW, LET'S WORK THROUGH AN EXAMPLE:

EXAMPLE:      JOB: \_\_\_\_\_      CARD NO.: \_\_\_\_\_

                    TOASTED GARLIC BREAD

LOOK UP THE BREAD SECTION IN THE INDEX. HAS EVERYONE FOUND IT? IT IS ON THE SECOND PAGE OF THE INDEX. UNDER BREADS, YOU SEE SEVERAL DIFFERENT KINDS OF BREAD. FIND THE CARD NUMBER FOR TOASTED GARLIC. NOW, WRITE YOUR ANSWER IN THE BLANK SPACE. YOUR ANSWER SHOULD BE CARD NO. D-7. DID EVERYONE GET THIS ANSWER CORRECT?

DOES EVERYONE UNDERSTAND WHAT HE IS TO DO? IF THERE ARE NO QUESTIONS, PLEASE BEGIN THE TEST. YOU WILL HAVE \_\_\_\_\_ MINUTES. PLEASE ANSWER ALL THE QUESTIONS.

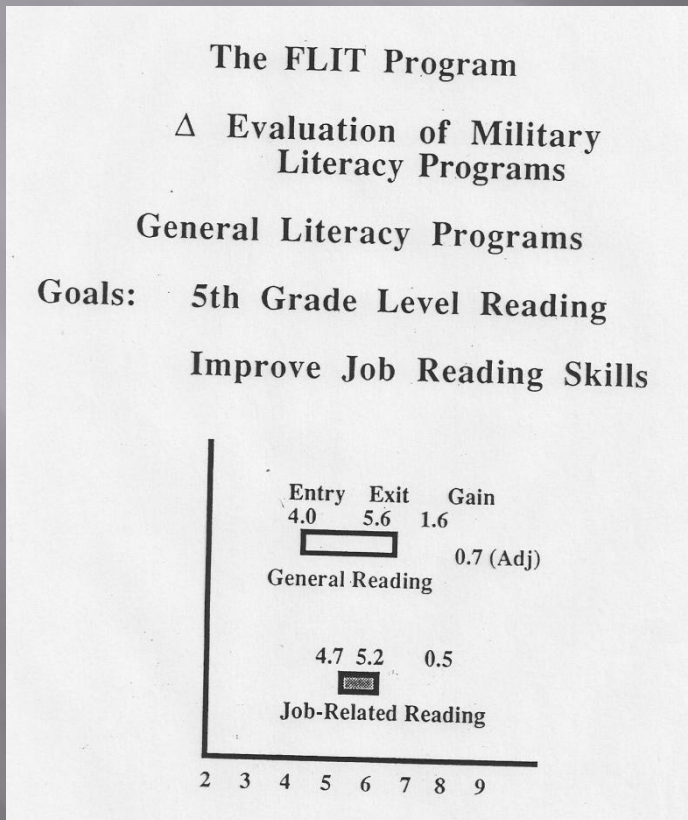
JOB: \_\_\_\_\_      CARD NO.: \_\_\_\_\_

- SPARERIBS AND SAUERKRAUT
- BAKED POTATOES
- CHILI CON CARNE
- WHITE CAKE (SHORTENING, BAKERY, EMULSIFIER)
- CHICKEN FRICASSEE
- GRIDDLE CAKES
- NEW ENGLAND BOILED DINNER
- LYONNAISE CARROTS
- NEW ENGLAND CLAM CHOWDER
- BROWNIES

Goal: Improve Job Reading Skills  
FLIT team developed job-related reading task tests to assess job-related reading gains

# The Functional Literacy R & D Program 1967-1976

## Evaluation of Army Literacy Programs



Goal: Improve Job  
Reading Skills  
General Literacy  
Program made 0.7  
grade level gain in  
general reading after  
adjusting for regression  
effects and 0.5 grade  
level gain in job-related  
reading

# The Functional Literacy R & D Program 1967-1976

## Evaluation of Army Literacy Programs

### Conclusions from evaluation of Army literacy programs:

- ☺ Reading skills assessed using general reading tests, not job-related tests
- ☺ Goal of achieving 5<sup>th</sup> grade level reading too low
- ☺ Gains in job-related reading low
- ☺ Instruction not job-related

# The Functional Literacy R & D Program 1967-1976



- ☺ Job Analysis of Literacy Demands
- ☺ Evaluation of Military Literacy Programs
- ☺ Develop/Implement/Evaluate Integrated (Contextualized/Embedded) Job & Literacy Skills Programs For Six Occupations

# Functional Context Education and Workplace Literacy

## Teaching Workplace Literacy in The U. S. Army's Functional Literacy (FLIT) program integrating reading skills and job skills education and training.

### Workplace Literacy For Transitioning New Hires Into Employment

#### **Associationism:**

Learning involves the automatic formation of connections or "habits" among ideas or thoughts when the ideas are associated together repeatedly. Teaching oriented towards repetition.

**Behaviorism:** Learning involves the changing of behavior through the manipulation of stimulus and response contingencies. Teaching oriented toward providing feedback reinforcing correct responses.

#### **Constructivism:**

Learning involves the use of old knowledge to construct new knowledge from information using active cognitive processes. Teaching oriented toward problem posing and solving.

#### **Late 1960s-1970s Functional Literacy (FLIT) program**

Use of associationism, behaviorism, and the newly emerging constructivism.

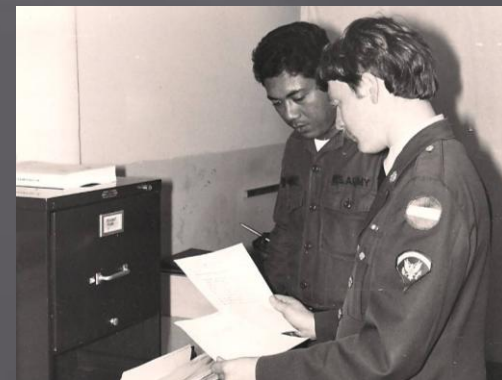
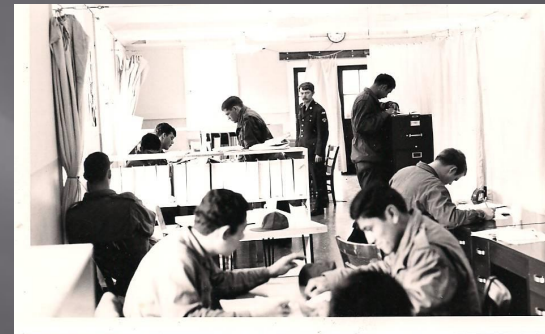
Based on the cognitive psychology that followed Behaviorism in the mid-1950s and incorporated the concepts of mental functioning between stimulus and response that were excluded in behaviorism.

The information processing models of mental functioning, with concepts of sensory memory, working memory and long term memory provided a cognitive architecture for analyzing some mental functions between stimuli and responses, and the central idea was developed that knowledge is actively constructed during learning rather than resulting from the automatic formation of associations due to repetition.

In the FLIT program two curriculum strands were developed.

**Strand 1: (associationism, behaviorism)** followed behavioral principles and consisted of instruction sequenced in modules similar to Witty's World War II Army Reader, with pre-and post-module tests to assess learning mastery of the material in the modules. This was self-paced, individualized learning in a semi-programmed manner.

**Strand 2: (constructivism)** Students worked in teams to study written passages of some 300-400 words and transform them into either pictures, matrices, or flow charts. These were social constructivist activities involving the active use of prior knowledge to transform the new information in the written passages from one form of representation into another representation of the knowledge in the passages.



# The Functional Literacy R & D Program

1967-1976

## **Δ Develop Integrated Job & Literacy Skills Programs**

### **Curriculum Strands**

#### **Strand 1: Reading-to-Do**

##### **Individualized**

**Cooks, Communications,  
Combat, Medical Corps,  
Vehicle Repair, Clerical**

##### **Modularized**

**Table of Contents, Indexes,  
Body of the Manual, Procedural  
Directions, Tables & Graphs,  
Job Forms**

##### **Competency-Based**

**Pre-Post Module Tests With  
Speed and Accuracy Standards**

#### **Strand 2: Reading-to-Learn**

##### **Team-Based**

**Collaborative Learning**

##### **Knowledge-Based**

**Job Knowledge**

##### **Learning Strategies**

**Representation Transformation**

# Functional Context Education and Workplace Literacy

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## △ Develop Integrated Job & Literacy Skills Programs

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Cooks, Communications, Combat, Medical Corps, Vehicle Repair, Clerical

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Table of Contents, Indexes, Body of the Manual, Procedural Directions, Tables & Graphs, Job Forms

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Pre-Post Module Tests With Speed and Accuracy Standards

#### Strand 2: Reading-to-Learn

##### Team-Based

Collaborative Learning

Knowledge-Based

Job Knowledge

Learning Strategies

Representation Transformation



# Functional Context Education and Workplace Literacy

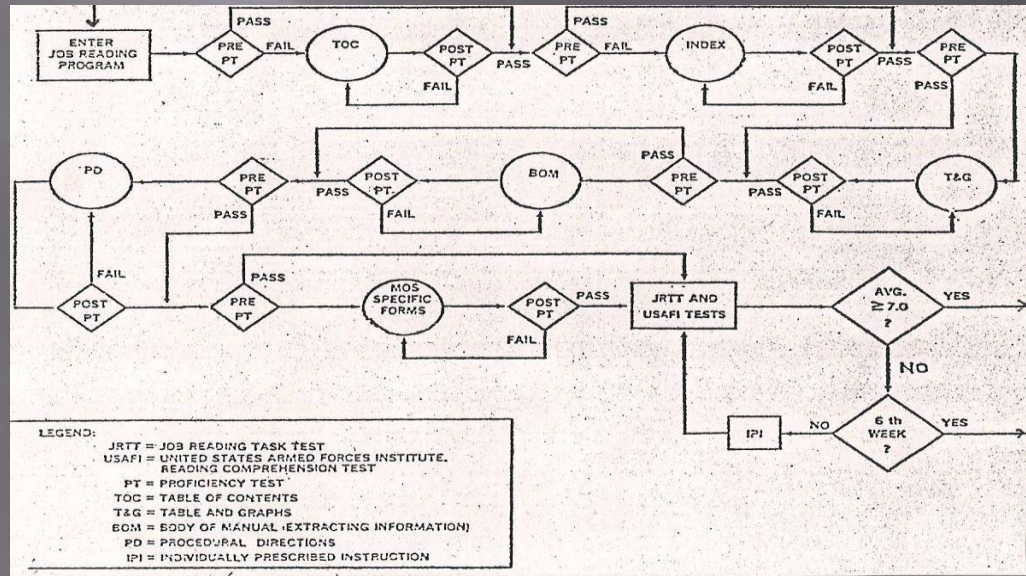
**FLIT Strand 1: Reading-to-Do Curriculum Strand Was Individualized, Self-Paced, Modularized With Pre-Post-Formative Assessments for Modules Using Job Materials For Clerical, Cooks, Combat, Communications, Medical Corpsman, Vehicle Repair**

Learning Theories:  
Associationism; Behaviorism

## Reading-to-Do

### Working Memory Management

- Determine An Information Need
- Hold Need in Working Memory
  - ◆ Rehearsal/Re-coding
- Search Information Sources
- Recognize Needed Information
- Hold in Working Memory
- Apply Information to Need
- Replace Information in Working Memory



# The Functional Literacy R & D Program

## 399. Taking Blood Pressure

### a. Method of Taking Blood Pressure (fig. 118).

- (1) Have the patient in either a sitting or lying down position.
- (2) Expose the upper arm and remove any restricting clothing.
- (3) Place the rubber bladder against the inner surface of the upper arm and wind the cloth cuff about the arm smoothly and firmly, but not tightly, binding the bladder in place.
- (4) Locate the brachial artery by feeling with the finger tips. Place the stethoscope over the brachial artery.
- (5) Close the screw valve on the rubber bulb by turning the screw clockwise, and inflate the cuff by pumping the bulb. Pump enough air into the bladder to collapse the brachial artery. (This will probably be 180 mm.; however, if sounds can be heard at this point, you must pump in more air until no sound is heard.)
- (6) Allow air to escape slowly from the bladder by opening the screw valve on the bulb. (Turn screw counter clockwise.) At the same time, watch the column of mercury dropping in its tube. Suddenly you will hear through the stethoscope a clear sound, which means that the blood has just started to come back through the artery. This occurs when the heart contracts, forcing the blood through the arteries. The blood pressure is at its highest peak. This is the *systolic* pressure. At this point make a reading of the level of the mercury column in its tube.
- (7) Allow the air to continue to escape slowly, while you listen to the sounds and watch the fall of the mercury in the tube. When you hear the last distinct sound, take a second reading of the level of mercury. This is when the heart is relaxing and the pressure in the artery is at its lowest point. It is called the *diastolic* pressure.
- (8) If an aneroid sphygmomanometer is used, the dial is clipped onto the cuff and readings are made as indicated by the needle (fig. 119).

## PART 3

**INSTRUCTIONS:** WRITE THE MISSING WORD OR WORDS ON YOUR ANSWER SHEET. SOME ANSWERS ARE ONLY 1 WORD; SOME ANSWERS MAY BE MORE THAN 1 WORD. NOTICE THAT THERE IS MORE THAN 1 PAGE OF READING MATERIAL.

21. TO MEASURE BLOOD PRESSURE, YOU FIRST FASTEN THE BLADDER AND CUFF TO THE PERSON'S -----.
22. THEN, USING YOUR FINGER TIPS, LOCATE THE -----.
23. NEXT, PLACE THE ----- AT THIS POINT.
24. INFLATE THE CUFF BY PUMPING THE -----.
25. RELEASE AIR BY TURNING THE SCREW IN THE ----- DIRECTION.
26. TAKE THE FIRST BLOOD PRESSURE READING WHEN YOU HEAR -----.
27. THIS FIRST READING IS CALLED ----- PRESSURE.
28. WHILE STILL RELEASING AIR FROM THE CUFF, TAKE A SECOND READING OF THE MERCURY LEVEL WHEN YOU HEAR THE -----.
29. THIS SECOND READING IS CALLED ----- PRESSURE.
30. BLOOD PRESSURE IS WRITTEN AS A FRACTION, WITH THE ----- PRESSURE AS THE TOP OR NUMERATOR OF THAT FRACTION.

FIGURE 2. SAMPLE OF THE BODY OF THE MANUAL SECTION OF THE JOB READING TASK TEST

# The Functional Literacy R & D Program

## Constructivism      Whole Language

### Reading-to-Learn

Constructing new knowledge out of old knowledge plus new Information.

Transform the way in which knowledge/information is represented (representation transformation-retran)-  
paraphrase, summarize,  
picture/image, mnemonics

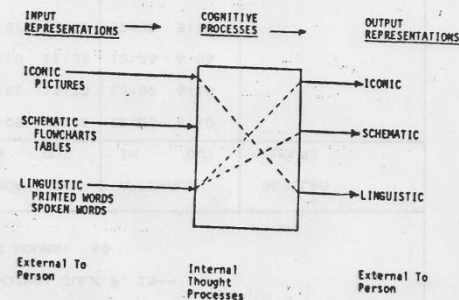
Storing new knowledge in a retrievable manner when it is called for.

Learn in functional, situated context.

**Strand 2: Reading-to-Learn**  
Team-Based  
Collaborative Learning  
Knowledge-Based  
Job Knowledge  
Learning Strategies  
Representation Transformation

*Reading-to-Learn* in the Functional Literacy (FLIT) Program

**Paragraph Recognition and Meaning: Anasynthesis and "Representation Transformation"**

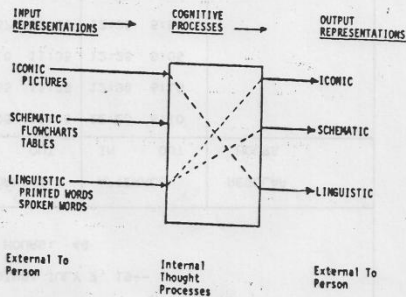


# The Functional Literacy R & D Program

## Linguistic - Written Input

### *Reading-to-Learn* in the Functional Literacy (FLIT) Program

#### Paragraph Recognition and Meaning: Anasynthesis and "Representation Transformation"



Mortar and artillery squads and platoons control indirect fire through Mortar Gunnery Teams and Field Artillery Gunnery teams. Each team has three parts: (1) an observer, (2) the fire direction center (FDC), and (3) the weapon crews or firing battery. The observer finds enemy targets and reports their position to the FDC. The FDC figures out the firing data, which includes the direction and range from the weapons to the target. The FDC sends a fire command to the weapon crews. The crews lay and fire the weapons. The observer can see where the rounds fall. If they do not hit the target, he can adjust the fire. He does this by sending back corrections to the FDC. He tells if the rounds went over the target or fell short of it, or whether they fell to the left or right of the target. The FDC changes these corrections into a new fire command to the weapon crews. The crews lay the weapons again and fire. In this way, mortars and artillery can hit targets that the weapon crews cannot see.

A: Linguistic Representation

# The Functional Literacy R & D Program

Linguistic - Written Input

Retran

Iconic Output

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A: Linguistic Representation



A: Linguistic Representation

B: Iconic and Linguistic Representation

(this is a free-hand copy of a drawing made by an adult literacy student with reading skills less than the fifth grade level.)

