This document describes the WORDS software, a computer program designed to evaluate a reading disabled student's sight word vocabulary using an Apple II microcomputer. A brief discussion of various methods of addressing reading difficulties precedes a detailed description of the WORDS program and its use. This description covers: (1) the organization of the program; (2) the learner response system; (3) the examiner's role; (4) methods of recording responses to stimulus words; (5) the program's branching capabilities; (6) directions for data viewing; (7) student data storage; (8) suggestions for successful operation; and (9) directions for the Save and Print commands. Appendices include a brief bibliography, a flow-chart of the WORDS scheme, and a printout of the entire program. (JB)
Words: A Microcomputer Program for Teaching and Testing Students' Sight Word Vocabulary

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An Innovative Block Grant project developed during the 1983-84 school year for use with learning disabled poor readers in the Libby Public Schools.

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WORDS INTRODUCTION

The reading process has been described as consisting of two dimensions: "bottom up" and "top down" processing (Johnston, 1983). In bottom up processing the reader constructs meaningful language from print by putting together textual components (letter sound combinations, punctuation, grammatical cues, etc.). Through the implementation of phonic skills, the reader is presumed to generate words which are subsequently strung together into sentences. The culmination of this process is the gathering of meaning from the printed page.

Top down processing reflects the reader's experiential background in generating meaning from text and can be described as a "slot filling" process. This type of skill is demonstrated in a student's ability to complete cloze type sentences as well as to read "between the lines". As such, the reading process can be described in terms of what readers brings to the page related to their history.

Those who contend that reading falls solely under one or the other of these dimensions are unfamiliar with the difficulties exhibited by reading disabled students. One needs only to work some time with these students to realize that the development of reading skills is an idiosyncratic phenomenon contingent upon both dimensions.
The ease with which children translate printed code into meaning also has a great deal to do with their past record of success. Canino has considered the theory of learned helplessness as it relates to achievement and has concluded that it requires research consideration as it pertains to L D children (1981). What is suggested here is that students who perceive that the ability to read is beyond their control (based on their existing difficulties) will be less inclined to put forth their maximum effort in pursuit of reading achievement. Consequently, teachers working with this group should seek to insure success in the reading program as quickly as possible if intervention is to be effective.

One measure designed to hasten successful feedback has been implementing "linguistic" reading programs. These programs employ the strategy of introducing subsets of words which are graphically similar (e.g., Tan Dan can fan Nan). Another method being suggested here stems from statistical analyses performed on sight words reported by Fry (1980). Referring to his original list of basic sight words (Fry, 1957) he has pointed out that "half of all written material in English is composed of just the first hundred Instant Words and their common variants" (1981, p. 284). Since such a large percentage of words comprises so much reading material, it would seem to
be a reasonable goal to have reading disabled students master these words at the automatic level.

The goal of the Libby, Montana mini grant design was to construct a program which presents these words to the student through the medium of an Apple II microcomputer. While originally designed as an evaluation device, this program may be enhanced by a teacher to present the new Instant Words in an instructional format. The computer program reflects only a rudimentary skill in BASIC programming and, as such, is open for modification and improvement by anyone wishing to do so.

Stimulus presentation time is relatively short (+/- .5 seconds) but can be altered in the program. The teacher may also wish to modify the program along presentation lines including distractors (video and audio), motivators (visual enhancements), stimulus location modification, and recall sequence for error re-presentation. Admittedly, this is only a first step program. However, with input from practitioners in the field who are interested in using the micros for enhancing instruction, this program has the potential for developing sight word mastery in the reading disabled student.
WORDS PROGRAM

The WORDS program was designed to evaluate a student's sight word vocabulary using the medium of the microcomputer. These sight words may consist of the program's Instant Word List compiled by Fry (1980) and included in the program. In addition, by entering the program through CONTROL-RESET and LISTing program numbers 2620-2710 the user can modify the program to use whatever stimulus items may be desired.

The organization of WORDS consists of a video presentation of the stimulus words (all upper case letters) for the student to read and orally respond to the examiner. The examiner may then enter the responses through the keyboard or number pad in the following fashion:

A. Typing the actual response

or

B. Using a code

1. Type "1" if the response is correct
2. Type "2" to indicate that the error was made as a result of a poor sounding out strategy.
3. Type "3" to indicate that the error was made as a result of other than poor sounding out.
4. Type "4" or "DK" to indicate "Don't know".

A scheme of the presentation is included in Table 1 to indicate the flow of WORDS. Reference to this table
in the following discussion will assist the user in understanding how the program is set up.

After introductory remarks and collecting of student data (Name, date, & grade level), stimulus words are presented for +/- .5 seconds. Examiner's recording of responses or code appears directly on the screen along the right hand margin, moving from top to bottom under the word RESPONSE. Since the stimulus word disappears prior to the request for a response entry, this format serves as a distractor to the student. The examiner may enter in the code or actual response at this point, correcting errors by backspacing and retyping. There is only room for 12 letter answers on the screen. When the examiner presses RETURN the next stimulus item will be presented on the monitor in the same location of the previous stimuli. Typing a question mark "?" in place of the student's response and pressing RETURN will branch the program to the viewing, printing and storage sectors of WORDS.

The program will ask if the examiner wishes to view the collected information. Here, it is suggested that the monitor (NOT THE TERMINAL) be turned off to allow any further testing to be done without the distraction of a lighted video screen on in the room. When testing is concluded or when the child leaves the room switching on
the monitor will permit viewing and printing the stored responses, as well as, transferring data to a storage file.

The WORDS program disk is notched on both sides to allow for student data storage on the reverse side. There is room for some storage on the program side of the disk but it is recommended that the reverse side or a separate data disk be used. Material can be transferred after it has been stored on one disk using the Review option. Deletion ability has not been built into the program. However, implementing Apple's procedure of pressing CONTROL-RESET will exit you from the program. Typing CATALOG will permit access to entered data and removal is the standard "DELETE 'file name'" process.

If you decide not to take the option of viewing the data type NO and press return. At times you may be sent to the viewing section of the program anyway. Merely press return and answer the prompt "Do you wish to view more?" with a "N" response. The program will then ask if you wish to print the results. (Deciding not to view the data on the first pass through the program does not stop the user from saving the data and calling it up again on a Review pass.) If you do not have a printer, answer "N" to this prompt. Here is a program problem. Telling the computer to send the program to a printer which is NOT
there will result in "hanging" the system. As a result, all your data will be LOST. There must be an easy solution but I have not yet learned it. In brief, DON'T ASK THE COMPUTER TO PRINT YOUR INFORMATION UNLESS YOU HAVE THE PRINTER CONNECTED AND OPERATIONAL. FAILURE TO HEED THIS ADVISE ON THE FIRST PASS THROUGH THE PROGRAM WILL RESULT IN THE LOSS OF ALL YOUR DATA!

The last branch of the program enables you to Save this data to disk for later viewing or for printing out and viewing at a later date. A flashing prompt will advise the user that you must save the program at this point. Again, failure to do so will result in the loss of all the test information for this particular child. It should also be noted that using both first and last names (or a code number, letter, etc.) will insure that accidental erasure does not occur for another child who has the same name when information is being transferred to the disk file.

From the main menu the user can catalog the files to determine what children have been recorded on the disk. The user may quit the program from the main menu and from the program end. The Review command permits calling up data from the storage disk.

A printout of the entire program is included. Graphics were done using the Graphics Magician program from Penguin
Software. All material is copyable.
References


Table 1
WORDS Scheme

- Startup Program
- Quit
- Main Menu
- Program Introduction "Name" & "Date"
- Present Words Record Responses
- Recall Data
- View Data
- To Printer
- Save Data To Disk
- Quit
100 TEXT : HOME
900 DIM A$(301)
910 DIM B$(301)
1000 GOTO 1060
1010 D$ = CHR$(13) + CHR$(4)
1015 REM *** CATALOG ROUTINE FROM MENU ***
1020 HOME
1030 PRINT D$;"CATALOG"
1040 INVERSE : PRINT "; PRESS ANY KEY TO RETURN TO MENU ";:NORMAL
: GET X$
1050 GOTO 1100
1060 HOME
1070 REM *** MENU ROUTINE ***
1100 HOME : VTAB 10:HTAB 6:PRINT "DO YOU WISH TO "
1110 VTAB 13:HTAB 9:PRINT "BEGIN A NEW FILE " - TYPE B"
1120 VTAB 14:HTAB 9:PRINT "CATALOG " - TYPE C"
1130 VTAB 15:HTAB 9:PRINT "QUIT " - TYPE Q"
1140 VTAB 16:HTAB 9:PRINT "REVIEW A FILE " - TYPE R"
1145 PRINT : HTAB 37:GET X$
1160 IF X$ < "C" AND X$ < "B" AND X$ < "Q" AND X$ < "R" THEN
1170 IF X$ = "C" THEN 1010
1180 IF X$ = "Q" THEN HOME : IF X$ = "Q" THEN END
1190 HOME : IF X$ = "B" GOTO 1240
1200 REM ALL MENU ALTERNATIVES ARE ADDRESSED AT THIS POINT.
1210 REM BEGIN TO CREATE DATA OR EVALUATE FORMERLY STORED DATA
*********
1220 VTAB 10: INPUT "STUDENT'S NAME: ";NA$
1225 IF NA$ = "" GOTO 1220
1230 GOTO 3670: REM *** ROUTINE TO GET STORED DATA FROM DISK ***
1240 VTAB 10: INPUT "ENTER STUDENT'S NAME: ";NA$
1245 IF NA$ = "" GOTO 1240
1250 PRINT : PRINT : HTAB 5: INPUT "ENTER TESTING DATE (E.G. 02 15 45) ";DA$
1255 PRINT : INPUT " ENTER GRADE LEVEL ";G$
1260 INVERSE : VTAB 20: INPUT " PRESS RETURN TO BEGIN ";R$
1270 HOME
1280 VTAB 18: REM *** DEMONSTRATION ROUTINE ***
1290 PRINT : PRINT " TO DEMONSTRATION: TYPE THE WORD PLAY... (THIS WILL SHOW WHERE STIMULUS WILL APPEAR.) POINT THIS OUT TO STUDENT NOW."
1300 NORMAL : PRINT " PRESS RETURN AFTER DEMONSTRATION... "
1310 INVERSE : VTAB 0 : HTAB .0 : INPUT I$: NORMAL
1320 HOME : PRINT : PRINT : INVERSE : PRINT "TO THE EXAMINER": NORMAL : PRINT " AF.ER STIMULUS WORD IS PRESENTED, TYPE STUDENT'S RESPONSE OR A CODE YOU MAY FIND MORE CONCISE. "
1330 PRINT : PRINT " TO TERMINATE ITEM PRESENTATION TYPE ' ?' AND PRESS RETURN "
1340 VTAB 14: FLASH : PRINT "GET READY ";NA$: NORMAL : VTAB 20: HTAB 13
: PRINT "PRESS ANY KEY TO CONTINUE": GET X$
1350 NORMAL : HOME : GOSUB 2470: REM *** TO PRESENTATION BEGINNING.
FOR I = 1 TO 301: READ A$(I): REM *** PROGRAM PRESENTATION BEGIN
S HERE ***
NEXT I
FOR J = 1 TO 301
VTAB 10: HTAB 10
PRINT A$(J): FOR K = 1 TO 400: NEXT K
SPEED = 230
HOME : VTAB 8: HTAB 9: PRINT ""
VTAB 9: HTAB 9: PRINT ""
VTAB 10: HTAB 9: PRINT ""
SPEED = 255
HOME
POKE 33,1: POKE 32,39: HOME
INPUT "RESPONSE": 13$(J): HOME
POKE 34,0: POKE 35,23: POKE 33,40: POKE 32,0
HOME
IF B$(J) = "?" THEN GOTO 2730
NEXT J
REM *** HERE IS WHERE PROGRAM CAN BE CHANGED BY
REM *** DELETING OLD DATA (#S 2620 -2720) AND ADDING NEW DATA.
REM *** OR BY INSERTING DATA STATEMENT PRIOR TO LINE 2620. ***
DATA THE, OF, AND, A, TO, IN, IS, YOU, THAT, IT, HE, WAS, FOR, ONE, ARE, AS, WITH
HIS, THEY, I, AT, BE, THIS, HAVE, FROM, OR, ONE, HAD, BY, WORD, BUT, NOT, WHAT, ALL,
WHERE, WE, WHEN, YOUR, CAN, SAID, THERE, USE, AN
DATA EACH, WHICH, SHE, DO, HOW, THERE, IF, WILL, UP, OTHER, ABOUT, OUT, MANY,
THEN, THEM, THESE, SO, SOME, HER, WOULD, MAKE, LIKE, HIM, INTO, TIME, HAS, LOOK
TWO, MORE, WRITE, GO, SEE
DATA NUMBER, NO, WAY, COULD, PEOPLE, MY, THAN, FIRST, WATER, BEEN, CALL, W
HO, OIL, NOW, FIND, LONG, DOWN, DAY, DID, GET, COME, MADE, MAY, PART, OVER
DATA NEW, SOUND, TAKE, ONLY, LITTLE, WORK, KNOW, PLACE, YEAR, LIKE, ME, BACK,
GIVE, MUST, VERY, AFTER, THING, YOUR, JUST, NAME, GOOD, SENTENCE, MAN, THIN
K, SAY, GREAT, WHERE, HELP, THROUGH, MUCH, BEFORE, LINE, RIGHT, TOO
DATA MEAN, OLD, ANY, SAME, TELL, BOY, FOLLOW, CAME, WANT, SHOW, ALSO, AROUND,
FORM, THREE, SMALL, SET, PUT, IN, DOES, ANOTHER, WELL, LARGE, MUST, BIG, EVEN,
SUCH, BECAUSE, TURN, HER, WHY, ASK, WENT, MEN, READ
DATA NEED, LAND, DIFFERENT, HOME, US, MOVE, TRY, KIND, Hand, PICTURE, AGAIN,
CHANGE, OFF, PLAY, SPELL, A'T, AWAY, ANIMAL, HOUSE, POINT, PAGE, LETTER, MOTHER,
ANSWER, FOUND, STUDY, STILL, LEARN, SHOULD, AMERICA, WORLD
DATA HIGH, EVERY, NEAR, ADD, BETWEEN, OWN, BELOW, COUNTRY, PLANT, LAST, SCHOOL,
FATHER, KEEP, TREE, NEVER, START, CITY, EARTH, EYE, LIGHT, THOUGHT, STORY,
HEAD, UNDER, SAW
DATA FOOD
DATA LEFT, DON'T, FEW, WHILE, ALONG, MIGHT, CLOSE, SOMETHING, SEEM, NEXT, HARD,
OPEN, EXAMPLE, BEGIN, LIFE, ALWAYS, THOSE, BOTH, PAPER, TOGETHER, GOT, GRO
UP, OFTEN, RUN, IMPORTANT
DATA UNTIL, CHILDREN, SIDE, FEET, CAR, MILE, NIGHT, WALK, WHITE, SEE, BEG
AN, GROW, TOOK, RIVER, FOR, CARRY, STATE, ONCE, BOOK, NEAR, STOP, WITHOUT, SECOND
LATE, MISS
DATA IDEA, ENOUGH, EAT, FACE, WATCH, FAR, INDIAN, REAL, ALMOST, LET, ABOVE
GIRL, SOMETIMES, MOUNTAIN, CUT, YOUNG, TALK, SOON, LIST, SONG, LEAVE, FAMILY,
BODY, MUSIC, COLOR
DATA "
2730 VTAB 5: PRINT "RESPONSES HAVE BEEN RECORDED IN COMPUTER TERMINAL AND ARE READY TO VIEW. IF YOU WISH TO SEE "$NA$" S: PRINT RESPONSES AT THIS TIME TYPE 'Y' AND PRESS RETURN.

2740 PRINT "(YOU MAY WISH LEAVE THE TERMINAL ON AND SWITCH OFF THE MONITOR TO CONTINUE OTHER TESTING AND VIEW RESULTS LATER. CAUTION: DO NOT TURN OFF TERMINAL.)"

2750 PRINT: INPUT X$

2760 IF X$ = "YES" GOTO 2310: IF X$ = "Y" GOTO 2810

2770 REM OFF TO VIEWING OPTION *****

2780 IF X$ = "NO" GOTO 3440

2790 REM OFF TO PRINT OPTION

2800 IF X$ = "N" GOTO 3440

2810 HOME: POKE 34,0: POKE 35,23: POKE 33,40: POKE 32,0: HOME

2820 INVERSE: IF NA$: PRINT "ON ";DA$;" GRADE LEVEL: ";G$: NORMAL: PRINT "PRESS AN Y KEY TO CONTINUE....": GET X$

2830 FOR L = 1 TO 15: PRINT A$(L);" / "B$(L)

2835 NEXT L: GOSUB 3430

2840 FOR L = 16 TO 31: PRINT A$(L);" / "B$(L)

2845 NEXT L: GOSUB 3430

2850 FOR L = 31 TO 45: PRINT A$(L);" / "B$(L)

2855 NEXT L: GOSUB 3430

2860 FOR L = 46 TO 60: PRINT A$(L);" / "B$(L)

2865 NEXT L: GOSUB 3430

2870 FOR L = 61 TO 75: PRINT A$(L);" / "B$(L)

2875 NEXT L: GOSUB 3430

2880 FOR L = 76 TO 90: PRINT A$(L);" / "B$(L)

2885 NEXT L: GOSUB 3430

2890 FOR L = 91 TO 105: PRINT A$(L);" / "B$(L)

2895 NEXT L: GOSUB 3430

2900 FOR L = 106 TO 120: PRINT A$(L);" / "B$(L)

2905 NEXT L: GOSUB 3430

2910 FOR L = 121 TO 135: PRINT A$(L);" / "B$(L)

2915 NEXT L: GOSUB 3430

2920 FOR L = 136 TO 150: PRINT A$(L);" / "B$(L)

2925 NEXT L: GOSUB 3430

2930 FOR L = 151 TO 165: PRINT A$(L);" / "B$(L)

2935 NEXT L: GOSUB 3430

2940 FOR L = 166 TO 180: PRINT A$(L);" / "B$(L)

2945 NEXT L: GOSUB 3430

2950 FOR L = 181 TO 195: PRINT A$(L);" / "B$(L)

2955 NEXT L: GOSUB 3430

2960 FOR L = 196 TO 210: PRINT A$(L);" / "B$(L)

2965 N,XT L: GOSUB 3430

2970 FOR L = 211 TO 220: PRINT A$(L);" / "B$(L)

2975 NEXT L: GOSUB 3430

2980 FOR L = 221 TO 235: PRINT A$(L);" / "B$(L)

2985 NEXT L: GOSUB 3430

2990 FOR L = 236 TO 250: PRINT A$(L);" / "B$(L)

2995 NEXT L: GOSUB 3430

3000 FOR L = 251 TO 265: PRINT A$(L);" / "B$(L)

3005 NEXT L: GOSUB 3430

3010 FOR L = 266 TO 280: PRINT A$(L);" / "B$(L)

3015 NEXT L: GOSUB 3430

3020 FOR L = 281 TO 295: PRINT A$(L);" / "B$(L)

3025 NEXT L: GOSUB 3430

3030 FOR L = 296 TO 300: PRINT A$(L);" / "B$(L)

3035 NEXT L
3410 PRINT: PRINT: PRINT "TO CONTINUE, PRESS ANY KEY": GET X$  
3420 GOTO 3440  
3430 PRINT: PRINT: INPUT "DO YOU WISH TO VIEW MORE? Y OR N: ";X$: IF  
X$ = "Y" THEN RETURN: IF X$ = "YES" THEN RETURN  
3440 HOME: VTAB 10: PRINT "******************************************************************
** DO YOU WISH TO PRINT THIS DATA A? Y/N **
******************************************************************": HTAB 31: GET X$  
3445 VTAB 13: PRINT "*

**********": HTAB 31: GET X$  
3450 IF X$ = "Y" GOTO 3470: IF X$ = "YES" GOTO 3470: REM OFF TO THE PR  
INT CYCLE  
3460 GOTO 3520: REM OFF TO THE DISK  
3470 PRINT "MAKE SURE THAT PRINTER IS ON ".": PRINT: PRINT: PRINT  
: PRINT "PRESS SPACE BAR TO BEGIN PRINTING. ": GET X$  
3480 PR# 1  
3490 PRINT "WORD STIMULUS - WORD RESPONSE FOR: ";NA$;" ON ";DA$: PRINT  
: PRINT: PRINT  
3500 GOSUB 4840  
3510 PR# 0  
3520 VTAB 10: FLASH: PRINT "IF YOU DO NOT SAVE THIS DATA AT THIS PO  
INT, YOU WILL LOSE IT FOREVER!": NORMAL: PRINT "IN ORDER TO  
SAVE THIS INFORMATION ON A DISK TYPE 'S' NOW. ".: PRINT: PRINT  
3530 PRINT: PRINT "TYPE ANY OTHER LETTER TO RETURN TO MENU": GET X$  
3540 HOME: IF X$ < > "S" GOTO 6000  
3550 PRINT "NOW SAVING WORDS ".;NA$: PRINT  
3560 D$ = CHR$ (4)  
3570 PRINT D$;"OPEN WORDS ";NA$: PRINT  
3580 PRINT D$;"WRITE WORDS ";NA$: PRINT  
3584 PRINT G$  
3585 PRINT D$  
3590 FOR M = 1 TO 300: PRINT A$(M); "0$(M)  
3595 NEXT M  
3600 PRINT D$;"CLOSE WORDS ";NA$: PRINT  
3610 VTAB 10: PRINT "******************************************************************

******************************************************************
3620 HOME: PRINT "DATA IS STORED.": INPUT "TYPE B TO RETURN TO BEGINNI  
NG OF PROGRAM. TYPE 0 TO QUIT. 

";OB$: PRINT  
3630 PRINT: PRINT "******************************************************************

******************************************************************
3640 IF OB$ = "0" THEN END  
3650 IF OB$ = "B" GOTO 6000  
3660 HOME: REM *** GETTING STORED DATA FROM DISK ***  
3670 GOTO 6000: REM *** GETTING STORED DATA FROM DISK ***  
3680 D$ = CHR$ (4)  
3690 PRINT D$;"OPEN WORDS ";NA$: PRINT  
3700 PRINT D$;"READ WORDS ";NA$: PRINT  
3704 INPUT G$  
3705 INPUT Da$:  
3710 FOR M = 1 TO 300  
3720 INPUT A$(M)  
3725 INPUT B$(M)  
3730 NEXT M  
3740 PRINT D$;"CLOSE WORDS ";NA$: PRINT  
3750 PRINT D$;"CLOSE WORDS ";NA$: PRINT  
3760 PRINT D$: PRINT : PRINT : PRINT : PRINT : PRINT  
3770 GOTO 2730  
3780 FOR M = 1 TO 300  
3790 PRINT A$(M); " \ ";B$(M)  
3800 NEXT M  
3810 PRINT D$;"RUN WORDS" 

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