

A Review

ARCADE STYLE SOFTWARE FOR YOUR MICRO: A REVIEW OF DLM'S ACADEMIC SKILL BUILDERS FOR MATH AND LANGUAGE ARTS

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The Arcademic Skill Builders series in math and language arts provides an imaginative electronic video arcade style to drill and practice. The language arts and math series each contain six different programs. Each package contains a fast action program with colorful graphics in an arcade format, supplementary worksheets, flashcards(math only), record keeping sheets, and progress charts. Arcademics were designed by Jerry Chaffin and others at the University of Kansas.

The developers' rationale was to make elements of classroom instruction as motivating as arcade games. Underlying assumptions guiding the design of Arcademics are clearly expressed. Success in learning is reflected in student improvement, rather than merely preventing the student from making mistakes. High rates of responding are built into the program as fluency is central to the operation of these programs. The authors clearly state that student motivation is encouraged through improvement in performance over time(learning), fast action(high frequency of responding), and increasing levels of difficulty.

Each program follows a unique game format. In Verb Viper, the player feeds the dragon the correct tense of verbs coming from caves to match the subject on the pad underneath. In the case of Word Invasion, the player helps Alien Octopus aim at and fire down words representing parts of speech (nouns, pronouns, verbs, adjectives, adverbs, and/or prepositions). Players fire from a star station in order to disintegrate uncoming meteors by answering

multiplication of numbers 0 through 9 in Meteor Multiplication. Apples are fed to alligators in a swamp by adding and subtracting numbers 0 through 9 in the game Alligator Mix. A record displays the high, low and current scores at the end of each game. Scores are recorded as hits and misses. See Table 1 for a complete listing of Arcademic Skill Builders.

Arcademic Skill Builders provide a broad range of skill levels in an attempt to individualize the instruction and make the programs useful to children in grades three through six. This is accomplished through the use of built-in program control options. All games have control options which may be used to adjust speed, content, reading and vocabulary levels, and running time. Speed of stimuli presentation may be adjusted from 1 to 9. The content adjustments are specific to each game; one must refer to the game reference card or manual. One may also adjust the difficulty of the reading and vocabulary levels from approximately grade one to beyond grade three. Games may be from one to five minutes in duration. Players may use keyboard commands or game paddle controls. Games may be played with or without arcade sound effects.

The basic philosophy of Arcademics is clearly stated in the manual. First, repetitious drill and practice can be fun and stimulating. Students respond to challenge, and, in this microcomputer software series, errors are viewed as opportunities to improve rather than as indications of failure. The rate of stimuli presentation imposes no ceiling on student performance. Feedback which is incorporated into the program will assist students in implementing performance and instructional strategies which facilitate improvement.

The suggested strategy for student placement into the program is to start students "where they aren't" and step forward or backward as necessary. A specific procedural approach or teaching strategy is outlined in all Arcademic manuals: (1) establish aims for students; (2) explain procedure to students; (3) monitor and record student progress; (4) chart student

TABLE 1
 ACADEMIC SKILL BUILDERS IN LANGUAGE ARTS AND MATH

NAME	CONTENT
LANGUAGE ARTS	
Word Invasion	Parts of Speech: nouns, pronouns, verbs, adjectives, adverbs, and prepositions
Verb Viper	Correct tenses of verbs
Word Master	Antonyms, synonyms, and homonyms
Word Radar	Sight words
Spelling Wiz	Spelling
Word man	Initial consonants and long and short vowels
MATH	
Alien Addition	Addition of numbers 0 through 9
Minus Mission	Subtraction of numbers 0 through 9
Meteor Multiplication	Multiplication of numbers 0 through 9
Demolition Division	Division problems with answers 0 through 9
Alligator Mix	Adding and subtracting numbers 0 through 9
Dragon Mix	Multiplication of numbers 0 to 9 and division problems with answers 0 through 9

progress; (5) interpret student progress; (6) establish strategies for improvement; and (7) set new aims. Aims are set for number of hits and misses by a designated date. The authors recommend that no aim be set at less than 40 hits and no more than two or three misses per two minute game. Students should be actively involved in aim setting. Student progress is charted on a two cycle semilogarithmic graph with room for 70 calendar days. Ten visuals of learning pictures with suggested teaching strategies are included in the manual. Blackline masters of the Student Record Sheet, Progress Chart, and Strategies for Improvement Sheet are included in the packet.

The authors recommend that the Skill Builders be linked to the elementary school curriculum and used to introduce and/or reinforce concepts. Software content is an integral part of the elementary school curriculum. The programs would be appropriate for most elementary school students beyond the second grade. Additionally, the programs could also be used by junior and senior high school students who are experiencing difficulty in the content areas. Program manuals list many ways to link the software to related activities. Blackline masters are included for all skills and each level of skill difficulty. These practice sheets look very much like those developed by Precision Teachers over the years, with many response opportunities and response counts on the right margins. Flashcard sets are included in the math programs.

COMMENTS: Arcademic Skill Builders clearly offer an alternative for those who are shopping for drill and practice microcomputer software appropriate for the math and language arts elementary school curriculum. To this reviewer's best knowledge, this is the only frequency-based software currently on the market. It clearly utilizes the fundamental elements of Precision Teaching. The arcade style, including high frequencies, certainly makes the games exciting to play. The games are highly sought after by students--young and old!

The control option built into all programs is very practical and provides much flexibility for using

the programs under various conditions. Teachers and/or students may vary content, difficulty level, speed of play, running time, and whether or not sound and/or game paddles are used in each program. However, no provision is made for adding new content.

A great deal of variability exists in speeds between programs. The author completed 4 levels of six programs 10 times. The median number of responses for each level of each program is shown in Charts 1 and 2. In Alligator Mix the response ratio for level 7 to level 1 is approximately a x4, and the response ratio in Verb Viper at the same level is less than x1.8. Therefore, the same speed levels across programs do not reflect the same response quantities.

A black and white monitor as well as a color monitor were used to review the program samples. Although the color was more aesthetically appealing, playing the games in black and white was not a detraction and was just as exciting. Once control functions are set or default values used, the disk may be taken out of the drive and used elsewhere. All programs operate on a single boot system. This is a tremendous advantage where multiple use is required. The option of running the program without noise in a classroom setting is a real asset to most practitioners. Current score, low score and high score are provided at the termination of each game. Scores recorded are only "counts" and are not transformed to frequencies. As a result, highs, lows, and currents will be much different when the game length(counting period) is changed.

Users of Skill Builders must be aware that game participation and scores measure more than just the language arts and math content. A certain amount of hand-eye coordination, dexterity and fine motor control are required to obtain high scores at high speed levels. There is also some variability between scores on the same game, with the same content, and at the same speed and difficulty level when the play option of keyboard or game paddle is elected. Additionally, the error goal of two or three misses in a two minute game, as stated by the authors, may be very unrealistic when students are using high speed level

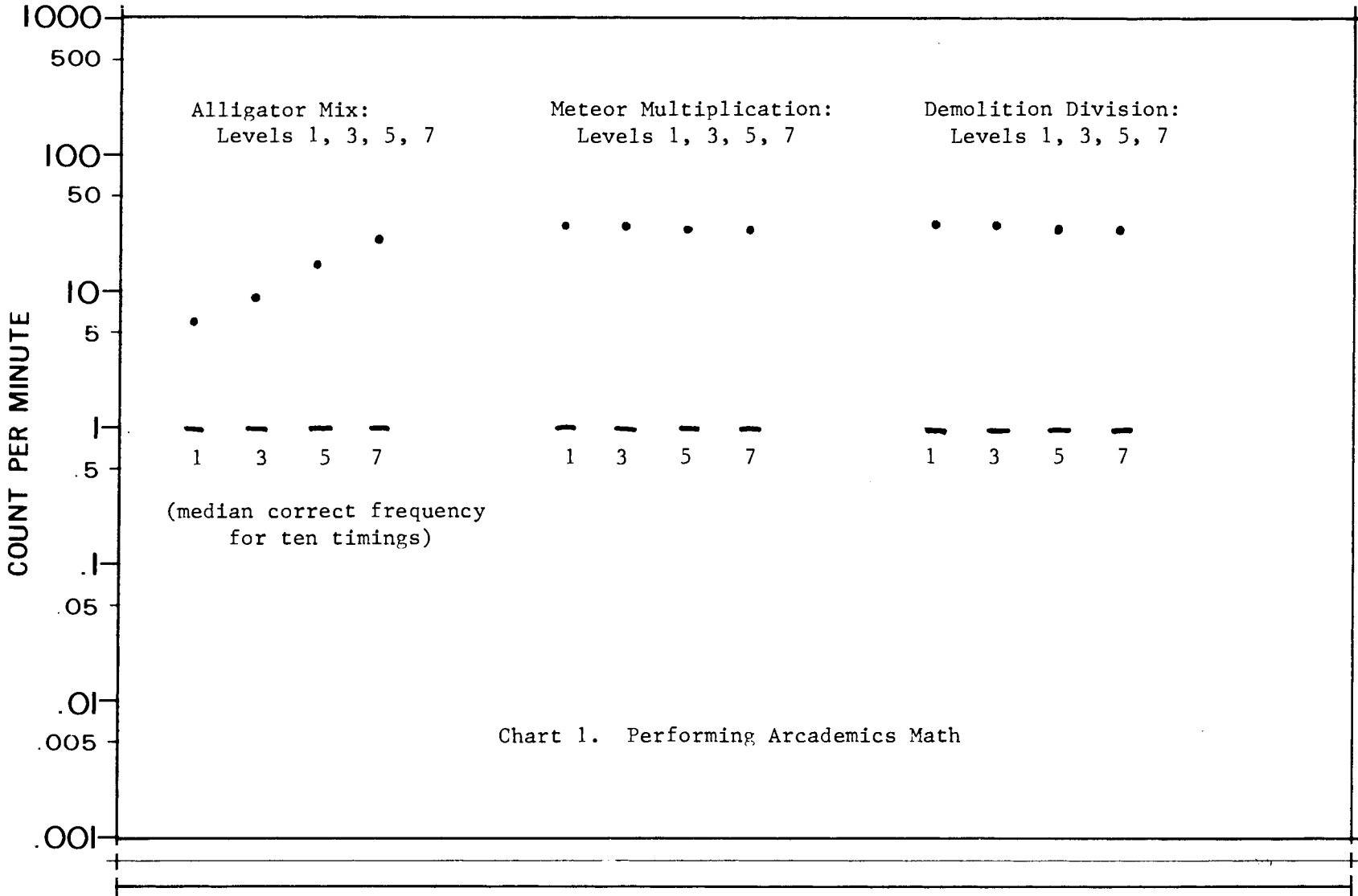
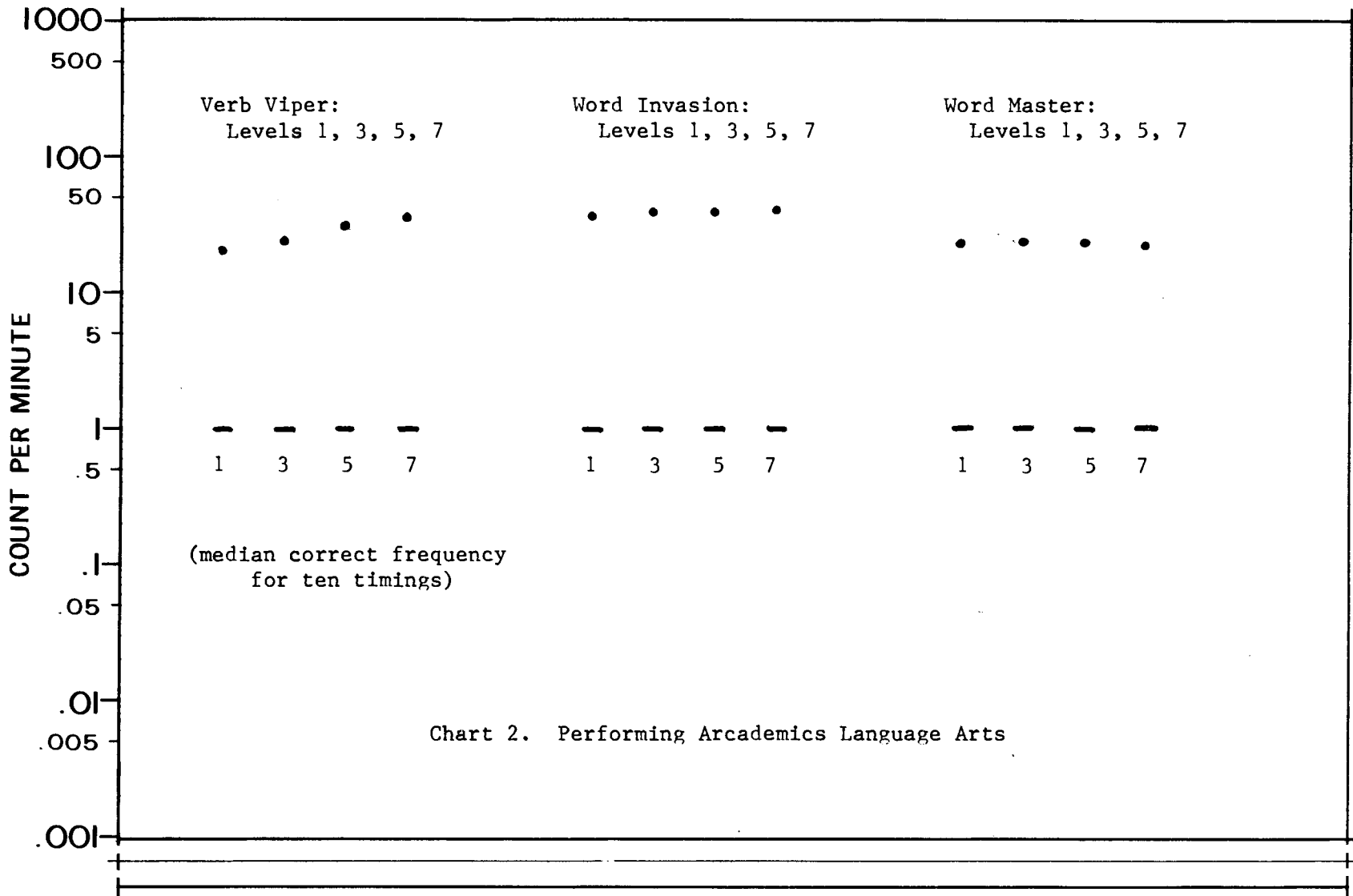


Chart 1. Performing Arcademics Math



options and going for high scores. Errors in keyboard entry and/or paddle board coordination often occur during a game. The important factor may be the ability of the student to demonstrate knowledge of that basic fact with a quick self-correction.

The authors indicate that errors are learning opportunities and students should feel free to make errors during game play. Strategies recommending how to improve performance and learning through teaching to the errors are outlined in the manual. However, specific errors made during the course of a game are not recorded or indicated in any manner. The student is provided an error count but not a listing of the specific errors. Even at the termination of a one-minute game, one does not remember the specific errors made during play. This makes it difficult to employ a "teach to the errors strategy" unless someone else can record or verify errors. For this reason, it may be helpful for students to work in pairs - one student as player and another as recorder.

A glut of poor to useless microcomputer software is currently in the marketplace, and much of it has found its way into educational settings. Arcademic Skill Builders in Math and Language Arts provide a clear alternative to what currently exists in drill and practice packages. Students really do enjoy playing the games. Approach responses to Arcademics are very strong as players always want to do one more. Most drill and practice software is painfully slow and imposes very low response ceilings on students. The action can be very fast in Arcademics. The control options make the programs very affordable, applicable and adaptable for users. The documentation and support materials which explain rationale and procedures are excellent. Actual game operation directions are somewhat sketchy, but they can be easily figured out. See Table 2 for additional information.

TABLE 2

DLM Arcademic Skill
Builder Information

HARDWARE: All 12 programs are compatible with Apple II and IIE, as well as Commodore, IBM PC and Atari 400, 800 and 1200. Programs published before October 1983 may not be compatible with all these systems. DLM will work with customer replacements.

SOURCE: Developmental Learning Materials
One DLM Park
Allen, Texas 75002

Toll-Free Phone 800-527-4747

COST: \$44 per program

BACK-UP: Defective disks replaced at no cost within six months of purchase. After six months disks can be replaced for \$20 each.

What effects will Arcademics have on students' learning in your classroom? The authors suggest research was conducted in the form of a developmental or pilot study. However, no data or references are included in the manual. Therefore, the aforementioned question remains an empirical one. I think that you will certainly want to give them a try. For all the shortcomings the programs have, they may very well be the best drill and practice software on the market and the only frequency-based software designed to ensure many painless student trials in these curricular areas.

About PT

NOTES FROM THE EDITOR

Patrick McGreevy

Welcome to Volume V of JPT. First of all, I would like to thank you for