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The Effectiveness of the Educational Game as a Method of Skill Building in the Junior High School Language Arts Area

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THE EFFECTIVENESS OF THE EDUCATIONAL GAME AS A METHOD OF SKILL BUILDING IN THE JUNIOR HIGH SCHOOL LANGUAGE ARTS AREA

by

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CHAPTER ONE

Innovations in education have been frequently an endeavor to make learning enjoyable. This objective has much merit. Why should so many children enter school as enthusiastic, inquisitive six-year olds and arrive in the upper grades as unhappy, bored teen-agers? On the other hand, we cannot harbor happy-but-uneducated students.

Parents in particular and employers in general are questioning whether the schools are doing what they believe should be done. Parents are understandably concerned about the quality of their children's reading and writing. They have become nostalgic about the "good old days" and are saying that young people really learned then and that a return to basics is mandatory. Employers attest to the fact that schools are not as effective as they were in the past; they are disappointed that many high school graduates have so little writing ability.

Learning is both a flowering and enveloping process. This is a big order for curriculum planners and instructional personnel--to nurture and challenge students so that they can have such an experience.

Goal setting is of prime importance in education. This should be a worthwhile one: to provide each student with the opportunity to develop his talent and, at the same time, equip him with the basic skills needed for today's world.

It is the writer's opinion that schools can be both innovative and basics-oriented. The solution may lie in using innovative processes which are highly structured.

The writer devised a language arts, skill building game using a race-track and racing cars. Selection of subject matter included syllabication, pronunciation, spelling, word meaning, and part of speech. A set of rules was developed to structure the game for classroom use.

The purpose of this paper is to illustrate that the educational game is a method of teaching that can be used as a skill-builder; a comparison is made of the academic growth of two groups. One group used an educational game; the other group used a traditional method. The educational game will be described in detail in Chapter Three. The traditional method is ambigious; it seems to be a philosophy, a belief that learning should involve much teacher activity. Glatthorn defines traditional instruction as "the standard method of lecture and recitation." [1]

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[1] The Teaching of English, ed. James R. Squire, Seventy-Sixth Yearbook of The National Society for The Study of Education, Part 1 (Chicago, University of Chicago Press, 1977), P. 197.

This study considers the traditional method to be that of lecture-recitation.

CHAPTER TWO

Review of Literature

Methods of teaching vary in efficiency and appropriateness, depending upon the objectives and the types of learning involved. Teachers, by learning to use many different methods, may better motivate their students to learn. Whatever the method or style, the primary goal of teaching is to promote learning.[2]

A teaching method is a recurrent instructional process, usable by more than one teacher, and applicable to various subject areas. A method is recurrent in that the activity is repeated at intervals, measured by minutes, hours, weeks, etc. To be usable by more than one teacher means that it should not depend upon the traits or talents of an individual teacher. To be applicable in various subject areas means that it is not a technique, not an instructional process used in a particular area only.

Description of Methods

Berliner and Gage categorize seven methods of teaching (1) lecture, (2) discussion, (3) written instruction, (4) tutoring, (5) programmed and computer-assisted instruction, (6) television and film, (7) simulation and games. They say that there is a place for all these teaching methods, and that a teacher must know the attributes of each in order to make a suitable selection.[3]

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2 The Psychology of Teaching Methods, ed. N. L. Gage, Seventy-fifth Yearbook of the National Society for the Study of Education, Part 1 (Chicago: University of Chicago Press, 1976), pp. 20, 21.

3 Ibid., p. 19

A brief description of these methods follows.

The Lecture

The lecture method can be traced to the days of Socrates. To survive, as it has through the centuries, the lecture method must have many virtues.[4] It is personalized. The lecturer can interpret for an immature student. The lecturer can observe his audience and can, on the spot, rephrase for better understanding. (Written material does not provide this opportunity.) The most recent material, not yet in textbooks, can be introduced. The lecture can communicate enthusiasm. The lecture can be logical and well prepared; impromptu answers given in discussion run the risk of being inaccurate. The lecture is economical time-wise for the staff.[5]

Discussion Method

The term "discussion method" describes a variety of classroom interaction patterns. Thus, there is difficulty in interpreting the results of research on effectiveness of this method. Potter and Anderson list these attributes: (1.) a group of people, usually in the roles of leader and participant, (2.) assembled at a definite time and place, (3.) to engage in interaction communication, (4.) using speaking and listening processes, (5) in order to

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4 John McLeish, "The Lecture Method," The Psychology of Teaching Methods, p. 252

5 Ibid., p. 258

accomplish instructional objectives.[6]

Gall and Gall say that the discussion method has been found to be effective at all grade levels--from elementary pupils to adult learners--and is appropriate for all subject areas.[7] Their evaluation of the effectiveness of the discussion method would be based on two aspects: what the students have learned and the level of skill in the discussion.[8]

Written Instruction

The title of Rothkopf's interelation of written material as a teaching method is a clever manipulation of words: "Writing to Teach and Reading to Learn." He writes, "Writing plays an awesomely important role in the instruction of all people, whether young or old." Writing is used to communicate. It links "the past to the future and today to tomorrow."[9] The most important single characteristic of writing as a method is its stability as an instructional system.

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6 David Potter and Martin P. Andersen, Discussion: A Guide to Effective Practice (Belmont, Cal.: Wadsworth Publishing Co., Inc., 1963).

7 Joyce P. Gall and Meredith D. Gall, "The Discussion Method" The Psychology of Teaching Methods, p. 169.

8 Ibid., p. 175.

9 Ernest Z. Rothkopf, "Writing to Teach and Reading to Learn; A Perspective on the Psychology of Written Instruction," The Psychology of Teaching Methods, (Chicago: University of Chicago Press, 1976), p. 91

It can be reliably delivered to all students each time it is used. It can be edited and re-written.[10]

Rothkopf says that "learning from text, regardless of how carefully the text has been written, cannot succeed without important activities on the part of the student."[11] For the last three decades, human learning was treated as if it were the result of outside forces. Now the focus is on the learner's behavior, the way he responds to the stimuli. Rothkopf refers to the concept of "mathemagenic" activities that are necessary for various learning outcomes. This term (derived from Greek roots--giving birth to learning) was coined to point out the important part that the student plays in determining what is learned.[12]

Rothkopf feels that content is of utmost importance. Other weaknesses can be overcome by suitable mathemagenic activities, advance organizers and cognitive structures.

Tutoring

Some educators and laymen believe that a one-to-one teaching situation is infallibly effective. Yet Ellson disagrees: "There is no magic in individual attention."

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10 Ibid., p. 93.

11 Ibid., p. 110.

12 Ibid., p. 109

He says that success in tutoring cannot be attributed to individualizing instruction. His reasoning is that only some tutoring is successful--if it were the one-to-one aspect, all tutoring would be successful. The significant variable is the program--what the tutor does.[13]

Programmed and Computer-Assisted Instruction

Programmed instruction is easily recognized by its format of striped pages, small steps, and overt answers. It is a developmental process rather than a product. This method had astounding acceptance in the 60's. The main reason for its demise was that inept planners produced poor programs.[14] The fact that programmed instruction has been successful with certain groups (military and industrial training) would infer that it could again come into favor in general education if it is the result of theoretical and empirical developmental processes.[15]

Computer-assisted instruction is the "interaction between a student, a computer-controlled display, and a response-entry

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13 Douglas G. Ellson, "Tutoring" The Psychology of Teaching Methods pp. 136, 137.

14 Bunderson and Faust, "Programmed and Computer-Assisted Instruction, The Psychology of Teaching Methods, p. 55.

15 Ibid., p. 90.

device for the purpose of achieving educational outcomes."[16] Computer-assisted instruction can be likened to the invention of printing, which brought the book into wide usage; this method is a breakthrough for repetitive drill-and-practice. For example, it is difficult to find a teacher who is willing to work with individual students on detailed basic mathematical and language skills. Computer-assisted instruction can provide high volumes of detailed work for many students at one time.[17]

Computer-assisted instruction has been successful in drill routines in the Chicago elementary schools.[18] Over sixty elementary schools are served by 1000 terminals; disadvantaged students who have been falling behind in reading start to catch up when they receive a few minutes each day on the terminal.[19]

Computer-assisted instruction has two limitations: (1) cost of computerized components and (2) the uneasiness of teachers feeling there is the threat that automation will cost them their jobs.[20]

Television and Film

Most students, from preschoolers to college students, find television and film attractive teachers.

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16 Ibid., p. 47

17 Ibid., p. 54

18 Harry Strassberg, Chicago Public Schools, personal communication.

19 Bunderson and Faust, "Programmed and Computer-Assisted Instruction, "The Psychology of Teaching Methods, p. 68.

20 Ibid., pp. 88, 89.

Television and films are often thought of as replacements for other methods of teaching. The fact that each teaching method has particular advantages has been overlooked in this viewpoint.

Television and film have these strengths: they (1) capture the uncommon and make it available to everyone; (2) alter visual and auditory characteristics of materials; (3) resort to animation; (4) reach a large audience; (5) can be repeated endlessly.[21]

The teacher has to evaluate television and film to decide how to integrate them best into the educational experiences of the student. To find the correct blend of content for the unique characteristics of the audience is not a simple task.[22]

Games and Simulation

A means of instruction that is growing in importance for use in small groups is the educational game. Tansey makes the distinction between "the kind of game a child finds in his Christmas stocking and an educational game." The former's purpose is to entertain; the latter's purpose is to instruct.[23]

Educational games may be set up as frame games.[24] The framework and rules of the game remain the same; the content changes.

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21 Aimee Dorr Leifer, "Teaching with Television and Film, The Psychology of Teaching Methods, p. 326.

22 Ibid., p. 334

23 J. P. Tansey and Derick Unwin, Simulation and Gaming in Education (London: Methuen Educational Ltd., 1969), p. 54.

24 Gail M. Fennessey and Erling O. Schild, User's Manual for Information: A Frame Game (Baltimore: Academic Games Associates, 1974).

Ordinary card games can be adapted for instructional use; the rules of the educational game follow the rules of the card game. Educational games (this term is used interchangeably with non-simulation games) represent a good starting point for simulation for many teachers.

In devising an educational game the first step is to ascertain the educational objectives. Certain factual material will be needed. A second aspect is practicality; the physical constraints of the classroom must be considered. The playing of the game cannot disturb nor induce in the players unsatisfactory behavior.[25]

The idea of the educational game is not new. Dewey advocated the use of games as a part of the curriculum; teachers of yesterday recognized the fact that any drill can be turned into a game. However, the current interest in educational games has not come about gradually; interest has focused on this kind of instruction only in the last decade.[26]

Three trends account for the increase in the usage of educational games: (1) dissatisfaction with the traditional activities in the schools, (2) current emphasis on the active learner--discovery learning, and (3) the appearance of a new medium simulation.[27] These three trends are closely associated.

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25 Tansey and Unwin, Simulation and Gaming in Education, pp. 54, 55.

26 David Zuckerman and Robert E. Horn, The Guide to Simulations/ Games for Education and Training (Lexington, Mass.: Information Resources Inc., 1973), p. 433.

27 Constance J. Seidner, "Teaching with Simulations and Games," The Psychology of Teaching Methods, p. 219.

Emphasis on the active learner means the student must involve himself in the learning process. This trend could remedy the weaknesses of the traditional activities. The appeal of simulation is its relevance, its real life situations.

Seidner refers to the concept of simulation as sometimes distinct from games and, in some cases, related to them. She says, "Simulation entails abstracting certain elements of social or physical reality in such a way that students can interact with and become a part of that simulated reality."[28] Tansey and Unwin refer to simulation as a participatory skill. They say, "It involves learning by doing and this is of particular benefit where human reactions, inter-actions and emotions are involved. Skill is acquired through practice and enables participants to learn facts, processes and alternative strategies."[29]

Mechanical simulators provide for student interaction, such as in driver-training. Computerized simulations are used mostly in research by theoreticians. In man-machine simulations the individual becomes a participant, making decisions presented by the computer. This combination provides a complexity of variables, much like real life. Simulations, in general, are simplications of the real world, focusing upon particular aspects.

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28 Ibid., p. 221.

29 Tansey and Unwin, Simulation and Gaming in Education. p. 25

Because of this specificity, validity is questioned--particularly in the all-man simulations, the kind most frequently used in the classroom. Even though the validity of the all-man simulations is a moot point, they afford much interaction among individuals, which is certainly "real life"; the use of a computer decreases or eliminates interactions of individuals.[30] Besides the acquiring of skills and knowledge, simulation can quickly show the effects of a decision. Simulation is, in effect, a laboratory where experience can be gained and decisions made, with no costly mistakes.[31]

Comparison of Methods

Studies have been made to compare the achievement made by students covering the same material, but participating in different methods of teaching. In a study by Durbin and Taneggio the following methods were compared:

(1.) lecture method--discussion method

(2.) lecture method--lecture-discussion method

(3) lecture method--supervised independent study

(4.) lecture-discussion method--discussion method

(5.) lecture-discussion method--supervised independent study

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[30] Seidner, The Psychology of Teaching Methods, pp. 221-223

[31] Tansey and Unwin, Simulation and Gaming in Education, p. 25.

They reported that the test scores for college students engaging in the above methods, and having studied the same material, differed very little. Eighty-eight comparisons were made and the test scores were standardized. It was found that the average difference between the test performances was close to zero. Therefore, Dubin and Taneggia concluded that college teaching methods do not differ in effectiveness in measuring achievement on final examinations.[32]

Hilgard and McLeish would explain the above in this way: there is an "equalizer" effect in most learning situations. Students learn from printed material, as well as from lectures, discussions, computer-assisted instruction, and the like. Students compensate for inadequacies in the teaching method by relying heavily on the textbook, which is usually the basis for the final examination. Hilgard and MeLeish feel it is difficult to detect the difference in the effects of teaching methods.[33]

In another report of the effectiveness of different teaching methods, Jamison, Suppes, and Wells investigated instructional radio as a teaching method. Their conclusion was that radio instruction, with supplementary printed material, can be used to teach almost any subject as effectively as any other teaching

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32 Robert Dubin and Thomas C. Taveggia, The Teaching-learning Paradox: A Comparative Analysis of College Teaching Methods (Eugene, Ore.: Center for the Advanced Study of Educational Administration, University of Oregon, 1968).

33 Ernest R. Hilgard and John McLeish, The Lecture Method (Cambridge, England: Cambridge Institute of Education, 1968).

method.[34]

Chu and Schramm compared instructional television with traditional instructional methods. They concluded that out of 421 comparisons of instructional television with other methods 308 showed no significant difference, 63 comparisons showed instructional television to be more effective, and 50 comparisons indicated that traditional teaching methods were more effective. From this study one accepts the equality of effectiveness of those teaching methods.[35]

Different teaching methods have different effects on students with different personality traits.[36] Dowaliby and Schumer found that high anxiety students had better performance than low anxiety students in the lecture method of teaching. And the reverse was true: students with low anxiety performed better than high anxiety in a discussion situation that was student centered. Acquisition of knowledge and class averages are important, but so are the personalities of students. These individual characteristics, along with the realistic consideration of costs for staff and materials, must be included when choosing a method of teaching.[37]

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34 Dean Jamison, Patrick Suppes, and Stuart Wells, "The effectiveness of Alternative Instructional Media: A Survey, "Review of Educational Research 44 (Winter 1974): p. 55.

35 Godwin C. Chu and Wilbur Schramm, Learning from Television: What the Research Says (Stanford, Calif.: Institute for Communication Research, Stanford University, 1967).

36 Fred J. Dowaliby and Harry Schumer, "Teacher-centered versus Student-centered Mode of College Classroom Instruction as Related to Manifest Anxiety," Journal of Educational Psychology 65 (April 1973): 125-32.

37 The Psychology of Teaching Methods, Seventy-fifth Yearbook, p. 18.

The nonsimulation game is usually considered an effective teaching medium. However, Edwards, Devries, and Snyder say there is little empirical support for this contention. They made a study of the combined use of a nonsimulation game and student teams in mathematics. The nonsimulation game, Equations, was used. The students played the game four hours a day, five days a week, for three weeks; a comparable group of control students received conventional instruction in mathematics. The researchers concluded that combining the game with team competition significantly increased students' mathematics achievement over that of a traditionally taught class.[38]

The Life Career Game involving work, school and marriage, produced convincing evidence of factual learning with simulation. Boocock says the "players did better than their controls on listing items and on questions that required understanding the general relationships between education and other institutions." The control group studied the same problems in a lecture-recitation manner. Boocock adds that "the over-all impression one gets from this experiment is that a good deal of learning and several different kinds of learning, can occur in simulation games of this sort." The experiment supports a basic tenet of the philosophy of educational gaming--that students can have fun and learn at the same

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38 Keith J. Edwards, David L. DeVries, and John P. Snyder, "Games and Teams," Simulations and Games (September 1972) p. 247.

time.[39]

An ERIC search for information on gaming activities within the last five years provided only three reports, two of which were on micro-film. (The search was for gaming in the language arts area at the junior high school level.) Wood reports that on a particular day, several junior high school students assembled at a college campus.[40] Various competitions, using foreign languages, were set up (Bingo, "Simon Says," etc.) with small prizes being awarded. The informal conclusion drawn was that the students were highly enthusiastic about the program.

Sher describes a classroom with students whose reading abilities ranged from nonreaders to a year below grade level.[41] Students were accepted from seventh, eighth, and ninth grade classes. When a student reached grade level in reading he did not continue the class. Hence, the greater the drop-off in figures, the more successful the program. The coordinator reports little trouble with students flunking the course. Only three students, out of 282 enrolled, were marked failing for any quarter--and those responded to a personalized approach. Scher says: "Perhaps the most unusual aspect of the reading laboratory is represented by the student

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39 Sarane S. Boocock and E. O. Schild, Simulation Games in Learning, (Beverly Hills, Cal.: Sage Publications, Inc., 1968), p. 151.

40 Micro-film, University of Chicago, ED127837.

41 Micro-film, University of Chicago, ED100165.

incentive programs which take a game approach to teaching."

Campbell reports on a non-textbook approach to learning German.[43] The unwritten policy regarding the taking of German was that any child was entitled to take the language and succeed. By starting the course with games, the program provided individualized instruction with no major emphasis on text. Each day the students chose their own games; after a time they were directed to the text. They were elated to find in the text the words they already knew. This program went from ninety students one year to 140 the next year. There is no research to prove that the increase in enrolled German students was due to the manner in which the class was conducted, but certainly that is the general impression.

Evaluating Methods

Several studies have been made on the effectiveness between and among teaching methods in gaining knowledge; effectiveness within teaching methods has had relatively little investigation.[44] Yet, "poor" and "good" lecturers can be easily cited. Likewise, other methods can exhibit these characteristics: good and bad introductions to televised lessons; aimless questioning in some discussions--the opportunity in other discussions to explore controversial topics, clarify values, practice public speaking.

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43 The Psychology of Teaching Methods, Seventy-fifth Yearbook, p. 18.

44 Ibid

Strengths and weaknesses are evident in the other methods: the successful programmed instruction provided by the U.S. Army; the many poorly prepared "striped textbooks" put out by novices for general educational use; the mistaken notion that mere individualization of instruction is a panacea for learning; the games that teach and those that do not. Writing has a myriad of diverse effects--some good, some bad.

Berliner and Gage conclude that when properly used, teaching methods have roughly the same effectiveness.[45] Different teaching methods are not equal in other ways: programmed instruction will decrease the amount of time needed to accomplish an objective; computer assisted instruction supplements traditional instruction--but is costly, equipment-wise; small group discussion can improve attitudes; students playing educational games are self-motivated. It is evident that many things should be considered in making the choice of a teaching method.

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45 The Teaching of English, ed. James R. Squire, Seventy-Sixth Yearbook of The National Society for the Study of Education, Part 1 (Chicago: University of Chicago Press, 1977), p. 197.

Chapter Three

Description of the Study

This study compares the traditional manner of building skill with the skill building that can be a part of the educational game.

In 1977, two groups of students attending summer school in adjoining school districts were involved with vocabulary skill for a given number of words. One group composed of eight students, grades five through seven, used a traditional approach and will be referred to as the traditional group. The other group, composed of seven students, grades five through eight, used an educational game and will be referred to as the game group.

Since the objective of the study was to determine whether an educational game could be as effective in building skills as traditional techniques, every effort was made to assure that the content presented for the two groups was the same. The introduction, the pretest and the postest were identical. The two groups met for six sessions of forty-five minutes each. The same teacher conducted the classes for the two groups. The summer school administrators felt that the two groups had similar socio-economic backgrounds.

The two school districts supplied recent achievement test scores and I.Q.'s for their students. For the traditional group the I.Q.'s ranged from 80 to 125, with a mean of 103.

The grade levels ranged from 5.9 to 7.9, with a mean of 5.9. The total reading achievement test scores ranged from 4.8 to 7.3, with a mean of 5.5.

For the game group the I.Q's ranged from 103 to 133, with a mean of 114. The grade levels ranged from 5.9 to 8.9, with a mean of 5.7. The total reading achievement test scores ranged from 6.5 to 10.5, with a mean of 8.6.

All students in the traditional group, with one exception, were reading .9 to 1.6 years below grade level. The one exception was a student reading .5 years above grade level. In the game group all students were reading .8 to 4.8 years above grade level. Following is a description of the six 45-minute sessions in which the traditional game groups participated. As stated in Chapter One, the traditional approach of instruction is lecture-recitation.

First Session--Traditional Group

The introductory session provided a brief summary of the content to be studied: word meanings, synonyms and antonyms; syllabication; pronunciation by phonetic symbols; and parts of speech. It was explained that not all parts of speech would be touched. For example, pronouns have no synonyms. Therefore, they would not be included in the content. (For further details of the introduction, refer to Appendix A.)

The introduction, which took approximately 15 minutes,

was followed by the administration of the pretest. (See Appendix B). The pretest, also taking 15 minutes involved five content areas: synonym, antonym, syllabication, pronounciation, part of speech for ten words. This left ten to fifteen minutes for beginning the actual study of the first ten words.

Dictionaries and study sheets were distributed. Since the study sheet was identical to the pretest, comments from the students were heard to that effect. It was explained that these 10 words were to be studied-hence the same listing of words. It was further explained that the posttest would also be the same, in order to compare the pretest and posttest results and to measure growth of learning. The class then started looking up the words in the dictionaries. (The dialogue for the dictionary activity is found in Appendix C.)

First Session--Game Group

The introduction for the game group was identical to that given to the traditional group. The same comments were made concerning the fact that not all parts of speech were to be studied in the vocabulary exercises.

As with the traditional group, the introduction took approximately 15 minutes and was followed by the administration of the pretest, which took 15 minutes. The remaining time was spent in introducing the game that was to be the means of study for this group.

The game consists of a race track, nine racing cars,

a die, and words printed on separate cards. (A model of the race track, about one-fourth of the size used, and a similarly scaled-down example of five of the cards is found in Appendix D.) The labeling on the card indicates the five color themes of the game: pink for synonym, yellow for antonym, turquoise for syllabication, orange for pronounciation, and green for the parts of speech.

Following is an explanation of how the game is played. Suppose a player throws a 6 on the die; he then directs his racing car over six spaces and stops, say on a pink space. (See Appendix D.) The player then picks up the top card, say diminish from the pile and looks at the pink notation on the card. Pink means that he is to choose a synonym from the three words given. He makes the choice lessen and turns the card over to ascertain the correct answer. He has chosen the right answer and earns one point, the number of points on the pink space. He records one point on the scoring device. (See Appendix E.) If he has not chosen the right answer, he would get no points on his score sheet and would remain on the same location.

(The same score sheet was used for all the sessions that the game was played. If the total score was more than 100 points, a second sheet was used as a continuation.)

Suppose the next player throws the die and a 2 turns up. The player moves his car two spaces and stops at, let's suppose, a yellow space. He picks up the top card, perhaps falter, from the pile of cards and looks at the yellow item on the card.

Yellow means that he is to select an antonym, if there is one listed. Not all words have opposite meanings, so the word neither can be a correct answer. The player decides the antonym is chide. He turns the card over to verify correctness and finds that he is wrong. Neither is the correct answer because neither chide nor augment is an antonym for falter. He gets no points on his score sheet, but keeps his position on the race track.

And so this procedure continues: player throws die; number on die indicates number of spaces to advance on the race track; color of space tells the task to be done; correct answer earns points, incorrect does not. There are two winners proclaimed after a prescribed length of time: (1.) the person who lapped the track the greatest number of times and (2.) the person who has the highest score. Winning one title does not preclude winning the other. Usually, there are two individuals as winners. Since the number of laps is determined by the numbers thrown on the die, the laps winner wins by luck.

The first session for the traditional group and the game group was described above. The five remaining 45-minute sessions were scheduled as follows:

Second Session

Traditional* and Game Group**

35 minutes: continue studying the 10 words taken on the pretest

10 minutes: administer posttest on 10 words studied

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* This group was taught by the lecture-recitation method, with the dictionary as text.

**This group was taught by the game method, with the educational game as a medium.

Third Session

Traditional and Game Group

10 minutes: Pretest on a new set of 10 words

35 minutes: Studied the second set of 10 words

Fourth Session

Traditional and Game Group

35 minutes: Studied the second set of 10 words

10 minutes: Posttest on the second set of 10 words

Fifth Session

Traditional and Game Group

10 minutes: Pretest on a new set of 10 words

35 minutes: Studied the third set of 10 words

Sixth Session

Traditional and Game Group

35 minutes: Studied the third set of 10 words

10 minutes: Posttest on the third set of 10 words

Chapter Four

Results of the Experiment

What are the conclusions to be drawn from the comparison of the two methods used by the respective groups? These are the hypotheses: H_1 There is no significant difference in the percentage of growth between the game and the traditional group; H_2 There is no significant difference in I.Q. scores.

To make decisive statements is difficult because the sample size was small and the sessions were of short duration. In addition, there was (1) a discrepancy in average reading levels: 5.5 for the traditional group, as compared with 8.6 for the game group; and (2) a difference in average I.Q. scores; an average of 103 for the traditional group, as compared with an average of 114 for the game group. These variables are shown on the chart, page 27. (The I.Q.'s were not available for students H and M. Y was a transfer student whose records had not arrived.)

Percentage of growth was determined by the ratio of the difference between the pretest and the post test and the difference between the pretest and 100%:

$$\frac{\text{difference between pretest and posttest--amount of growth}}{\text{difference between pretest and 100\%--possible growth}}$$

Based on this ratio, the traditional group made an average growth of 42%, the game group an average growth of 57%. The writer used the Sign Test and found that the two scores, pretest and posttest, gave all positive differences which indicated that each student in both groups did experience some growth.

TRADITIONAL

SUBJECT	READING LEVEL	I.Q.	PRETEST	POSTTEST	SIGN TEST	% of GROWTH
A	5.9	104	54	60	+	13
B	3.9	95	38	48	+	16
C	6.2	125	46	82	+	67
D	5.4	80	44	86	+	75
E	5.4	91	34	54	+	31
F	5.8	113	34	62	+	44
G	6.2	105	38	72	+	55
H	4.9	___	16	44	+	33
*	5.5	103	38	64	.	42

*AVERAGE

GAME

SUBJECT	READING LEVEL	I.Q.	PRETEST	POSTTEST	SIGN TEST	% of GROWTH
K	6.7	113	44	84	+	71
L	9.2	133	84	98	+	88
M	9.8	___	66	68	+	6
N	7.8	108	58	72	+	33
X	9.0	115	48	86	+	73
Y	___	___	10	48	+	42
Z	8.9	103	46	92	+	85
*	8.6	114	51	78		57

*AVERAGE

So the conditions which intervened between the two tests (traditional treatment and game treatment) did make positive difference between posttest score and pretest score. No further statistical analysis will be made, due to the small size of each group. Such analysis would have little meaning for very small numbers. However, informally, we might expect the game group to have a greater rate of growth because its average I.Q. scores

and reading scores were higher. Attitude, which generally cannot be quantified but plays a vital role in learning, will be briefly considered. The academic growth experienced by the traditional group was accompanied by observed apathy and boredom. From the third session on, the group constantly grumbled about taking the pretests and posttests, and the difficulty of the words assigned. The academic growth experienced by the game group was accompanied by observed enthusiasm and interest. That group cheerfully took the pretests, started its game with alacrity, and showed no reluctance to taking the posttests.

Chapter Five

Summary and Conclusions

These are the conclusions made from the study:

1. The presence of academic growth for the game group proved that the educational game can be used as a medium for basic drill.
2. Greater growth might have taken place with the game group if the game had had stronger controls. It was observed that frequently the only real attention given to the task (choosing of synonyms, antonyms, etc.) was when it was the player's turn. This inattention precluded drill on the total number of words for each student. And then there was the element of chance: the word that turned up for the individual's turn might be the one he already knew--had correct on the pretest. Controls and revision of rules were needed.
3. Greater growth might have been exhibited by the game group if the teacher had been a participant in the game. In the experiment, the teacher explained the rules the first day and was merely a spectator from thereon. The purpose of the spectator role was to determine whether or not the game was sufficient unto itself as a skill builder. (It seemed to be, as stated in conclusion 1 above.) It was the writer's

opinion, from observation, that greater growth could have been experienced if the teacher had been a participant to assure that all players listened to each question and to each answer.

4. The traditional group's attitude might have been different if it had used the game method. Since the same teacher conducted the two groups, the variable of a different teacher personality was removed. Although there was friendliness and cooperation at the first two sessions of the traditional group, the students became succeedingly more hostile. At the second to the last session, the teacher suggested that a party be held at the last session, after the posttest was taken. There would be treats and the playing of the vocabulary game that used the very words they were studying. Accordingly, the last session was lengthened and the party took place. It was difficult to believe the transformation. There was no grumbling. These students exhibited a real interest in the questions. They concentrated on following the rules. The observation of this complete change in attitude leads the writer to feel that the attitude of this traditional group would have been different if the game method had been employed.

5. The traditional group might have had greater academic growth using the game method. The greatest single

deterrent to learning is the ability of a student "to be turned off". If the attitude had been different, then there could have been a cause-effect relationship between conclusion (4) and (5): better attitude produces better scores.

A revision of rules, mentioned in 2 above, was made. The effectiveness of that revision and teacher participation in the game, referred to in (3) above, are described in the following paragraphs. At the writer's school in the spring, the regular course of study was dropped and a mini-course schedule was taken up for eight school days. The vocabulary game described in Chapter Three was offered as an academic course. The students who signed up proved to be a fine testing group for the revised version of the vocabulary game, for the teacher's role in the educational game, and for gaming in general.

Major changes in the game centered on using two dice instead of one die. When the dice were thrown, the larger number dictated the number of spaces to travel on the race track. The smaller number was used only if an item were answered incorrectly. Then the person whose car number matched the smaller number on the dice had the chance to correct the item and get the points for the score. This change corrected the previous weakness: inattention of those who were not playing at the moment.

An addition to the game was the inclusion of the spelling of one of the words. If doubles were thrown with the dice, it was considered to be a flat tire. This meant that the player

who threw the doubles did not advance on the track; the player whose car number matched the number thrown, was asked to spell the word which was taken from the bottom of the stack of cards. A correct spelling earned the sum of the two numbers thrown, i.e., two 5's thrown were worth 10 points. Easy points were earned if the player threw doubles with his own number coming up. He took the bottom card and, looking at the word, spelled it aloud. Including "chance" or "luck" items of this kind helped to keep the slower student in the running.

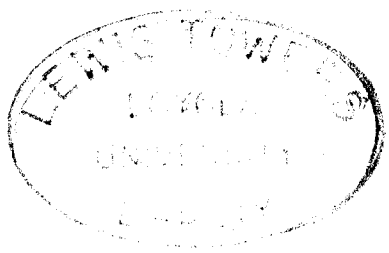
The writer felt that the most effective role of the teacher in gaming was that of supervisor, "sitting in" on the play, not as a player but as a resource person for explanation of word meanings, parts of speech, etc. This direct supervision gave needed structure to the game.

The writer feels that failure to teach with an educational game is often the result of more stress placed on game than on educational. Teachers are apt to feel that more freedom must be permitted when a game is being played. This thinking is erroneous. Since gaming and simulation have been elevated to the status of method of teaching, they should be accorded the same discipline that other methods receive.

The writer feels there are three other contributing elements to a game's failure to teach: (1) inadequate preparation of subject matter, (2) weakness of rules, and (3) a certain percentage of students who decide they"don't want to play."

The first two points need no elaboration. The third can be disconcerting, to say the least. However, it can be handled in this fashion: "This is the method of teaching that will be used today. There are objectives to be attained, and there will be a test based on the facts used in the game." (Test is a magic word!) This approach, besides being an explanation, sets the climate for desirable classroom behavior. Teachers must be definite regarding their expectations of both academic achievements and standards of behavior.

The choice of a teaching method, when formally considered, could throw a conscientious teacher into a state of confusion. There is no need for this: If the process gets results within reason, use it. Certain techniques might be very effective at one time and not nearly so effective at another. Perhaps a combination of methods serves as the right approach. Being flexible and openminded is important. Study the needs and use the means that best suits the problem. Teachers must think innovatively, so that neither they nor their students are bored with their mutual assignment: cultivation of the intellect.



Appendix A

The following approximate narrative was presented for both the traditional group and the game group during the first session:

We will be studying words--synonyms for words, antonyms for words, pronounciation of words, syllabication of words, and parts of speech of words.

A synonym is a word that has the same meaning or nearly the same meaning as another word. Examples: happy-joyful; unhappy-sad. I believe we could correctly say that every word has a definition. But we cannot say that every word has a synonym.

An antonym is a word that is opposite in meaning to another word. Examples: happy-unhappy; joyful-sad. Many words do not have antonyms. Examples: niche, meaning a place or position for a person or thing, would have no antonym. Decoy, meaning a lure or to lure into a trap, would have no antonym.

Syllabication means the dividing of a word into syllables. A syllable is one or more letters that form a sound. The division of a word into syllables allows us to divide a word correctly at the end of a line. The hyphen (-),a mark of punctuation, indicates that the other syllable or syllables of a word are on the next line.

Phonetic symbols help us to "sound out" a word. The dictionary lists the phonetic symbols, sometimes referred to as pronunciation symbols. Each symbol is a direction to say one sound. Some syllables are emphasized or spoken with greater

force than others. This emphasis is shown in the written or printed word by a vertical mark, an accent, preceding (in some dictionaries following) the stressed syllable. An example is the word debate--di-'bat. Some words have two accents, a main accent and a secondary or lesser one. The main accent, a heavier one, receives a stronger tone of voice than the secondary accent which is placed low, preceding the syllable. An example is 'pen-mən-ˌship.

A part of speech is determined by usage. For example, a single word may be used as a noun, verb, and adjective. Take the word snow. "The snow covered the ground." Snow, in the preceding sentence, is used as a noun, the name of something. "Do you think it will snow?" In this sentence the word snow is a verb because it shows action. "The snow plows were clearing the roads." In this instance the word snow is an adjective, telling the kind of plow. Adverbs are used to tell how, when, where,or why, Pronouns take the place of nouns and, therefore, do away with monotonous repetition. Conjunctions join words, phrases, and clauses. Interjections, used sparingly, can supply the needed spice for writing.

Four of the eight parts of speech will be excluded from your study. They are: pronouns, prepositions, conjunctions, and interjections. Pronouns take the place of nouns but are not synonyms for the nouns. You, a pronoun, can stand for many

different people, as can he, they, etc. Certainly there are no antonyms for pronouns. Some prepositions can be used interchangeably: " decrease in skill" or "decrease of skill." The co-ordinate conjunctions, and, but, or, and nor, have neither synonyms nor antonyms. It could be said that hurrah and yeah have similar meanings, but probably only from the sudden or strong feeling indicated by the exclamation mark or by the inflection of the voice.

The four parts of speech that will be included in this study are: nouns, verbs, adjectives, and adverbs. The kinds of nouns that will have synonyms are common nouns: baby-infant; and abstract nouns: courage-bravery. Proper nouns will not have synonyms nor antonyms. For example, John Jones has neither.

Many action verbs have synonyms: hasten-hurry. They also have antonyms: hasten-loiter. The forms of the verb to be have no synonyms nor antonyms.

Limiting adjectives, such as this or three, do not have synonyms nor antonyms. Descriptive adjectives may frequently have synonyms (pretty-beautiful) and antonyms: (pretty-homely).

Adverbs of manner tell how: swiftly or happily. Synonyms for these words would be quicklyor gaily; antonyms would be slowly and sadly. Adverbs denoting when have synonyms and antonyms. Late is an adverb; the synonym for late is tardily; the antonym is early.

A summary of these four parts of speech will be on the

board for your reference.

Noun:	person scholar	place municipality	thing humility
Verb	shows action ransack		
Adjective:	what kind of? reluctant		
Adverb:	answers how? judiciously	answers when? promptly	

SCHOOL_____ DATE_____ NAME_____

(CIRCLE CHOICE--FILL BLANKS)

DIMINISH

SYNONYM: LESSEN-MEDDLE-INTRUDE
ANTONYM: INCREASE-SEPARATE-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

FALTER

SYNONYM: ENHANCE REPROACH HESITATE
ANTONYM: CHIDE AUGMENT NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

MELANCHOLY

SYNONYM: IMPERTINENCE-SADNESS-COURTESY
ANTONYM: EXHILARATION-DIFFIDENCE-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

VALIANT

SYNONYM: BRILLIANT-COURAGEOUS-SOLID
ANTONYM: TIMID-DULL-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

JUDICIOUS

SYNONYM: IMPULSIVE-SENSIBLE-ORIGINAL
ANTONYM: FAMILIAR-RECKLESS-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

APPENDIX B

This sheet served a three-fold purpose:
1. Pretest for both groups
2. Post test for both groups
3. Study sheet for the traditional group

(CIRCLE CHOICE--FILL BLANKS)

AMNESIA

SYNONYM: AMBITION-FRUITFULNESS-FORGETFULNESS
ANTONYM: SATISFACTION-FERTILITY-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

OBSTRUCTION

SYNONYM: CURIOSITY-EXTENSION-OBSTACLE
ANTONYM: PECULIARITY-ASSISTANCE-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

EMBELLISH

SYNONYM: DECORATE-EMBRACE-EMBARRASS
ANTONYM: ENCOUNTER-STRIP-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

IMPUDENT

SYNONYM: INANE-BOLD-SPARSE
ANTONYM: RESPECTFUL-STINGY-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

UNIQUE

SYNONYM: MODEST-GRACIOUS-UNUSUAL
ANTONYM: BASHFUL-ORDINARY-NEITHER
NUMBER OF SYLLABLES: _____
PRONUNCIATION: _____
PART OF SPEECH: _____

This is the set-up for a group of ten vocabulary words with five categories for each word. The total number of items on this sheet is 50. There were two other such sheets--making 150 the over-all number of items studied in the experiment.

* Neither can be a correct answer--it means that neither of the other two other words is an antonym

Appendix C

The following approximate dialogue took place in teaching the traditional group:

Teacher: "The first word on your worksheet is diminish. When you find that word in the dictionary, raise your hand. John, your hand is raised. What is the page number? (Page 227). Very well, let us turn to that page. Mary, would you read the definition as given?"

Mary reads: "To make less or become less, as in amount, size, or importance; to lessen; to decrease: as a weather forecast of clear skies and diminishing winds."

Teacher: "Look at the three words following synonym on your worksheet? Which one was mentioned in the dictionary definition that Mary read? Yes, it was lessen. Would you then conclude or decide that lessen is a synonym for, or has the same meaning as, diminish? (Students agree.) Then we will follow instructions and circle the word lessen as the synonym for diminish. One, and only one, of the words listed after synonym is correct.

Now looking at the study sheet again, we see antonym, which means opposite in meaning. Is there any clue in the dictionary definition that might help us to pick out the antonym for diminish? (No answer. Teacher continues lecture.) The definition mentions decrease for a synonym, as well as lessen. So the opposite word in meaning for diminish would be the opposite of lessen or the opposite for decrease. The word increase is an antonym for decrease and also an antonym for diminish.

Again, following instructions, circle the word increase (listed on your study sheets.) as the correct antonym for diminish. (The above reasoning for the antonym selection was understood by most students; those who were confused were individually helped later.)

Following the word antonym on the study sheet, two words are listed, one of which might be the antonym. The third word will be neither; neither can be a correct answer, if neither of the other two words is correct. Keep in mind that many words do not have opposites and that neither will be the choice in those instances.

Looking at the study sheet again, we see that we are expected to syllabicate. The word diminish, in the dictionary, has how many syllables? (Someone answers three.) Agreed, there are three syllables. In this dictionary the syllables are separated by dots. You will put down on your papers three to indicate that there are three syllables in the word diminish.

Now look at the phonetic symbols in the dictionary that tell us how to pronounce the word. John, pronounce the word, paying close attention to the sounds as indicated in the dictionary."

John: "Də-mim'-ish." (The dictionary lists it di'min'ish for syllabication.)

Teacher:"Fine, Now copy carefully the phonetic symbols in the blank space provided on the work sheet. Test yourself. Could you re-write those same phonetic symbols without looking at the dictionary? You will be expected to do so at a later time.

Appendix C

The last item asks us to decide the part of speech for diminish. You will see an abbreviation in the dictionary for the part of speech. In this dictionary, the abbreviation follows the phonetic symbols. Do you see the small v? This stands for verb. Put verb on your papers as the part of speech for diminish.

HOW TO PLAY THE GAME:

1. Place pack of cards, answer side down on "cards"
2. Players take turns throwing a die
3. Player with lowest number has choice of racing car and plays first, player to right, next, etc.
4. First player places his car at starting gate, throws die, advances spaces indicated on die
5. Color that car stops on, indicates what is to be done: pronounce word, choose synonym, antonym, part of speech, or number of syllables
6. Pink space, choose synonym from words listed
7. Yellow space, choose antonym or "neither"
8. Turquoise space, indicate number of syllables
9. Orange space, pronounce word correctly
10. Green space, give part of speech of word
11. Correct answer, player records on scoring device number of points on space
12. Incorrect answer, player remains on space, gets no points

ALL PLAYERS ARE TO LISTEN TO THE QUESTION AND TO THE ANSWER

FRONT	BACK
DIMINISH SYNONYM : LESSEN MEDDLE INTRUDE PINK ANTONYM : INCREASE SEPARATE NEITHER YELLOW NUMBER OF SYLLABLES _____ TURQUOISE PRONUNCIATION _____ ORANGE PARTS OF SPEECH _____ GREEN	ANSWERS SYNONYM : LESSEN PINK ANTONYM : INCREASE YELLOW SYLLABLES: THREE TURQUOISE PRONOUNCIATION: də-'min-ish ORANGE PART OF SPEECH: VERB GREEN
FALTER SYNONYM : ENHANCE REPROACH HESITATE PINK ANTONYM : CHIDE AUGMENT NEITHER YELLOW NUMBER OF SYLLABLES _____ TURQUOISE PRONUNCIATION _____ ORANGE PART OF SPEECH _____ GREEN	ANSWERS SYNONYM : HESITATE PINK ANTONYM : NEITHER YELLOW NUMBER OF SYLLABLES : TWO TURQUOISE PRONUNCIATION : 'fȯl-ter ORANGE PART OF SPEECH : VERB NOUN GREEN
MELANCHOLY SYNONYM : IMPERTINENCE SADNESS COURTESY PINK ANTONYM : EXHILARATION DIFFIDENCE NEITHER YELLOW NUMBER OF SYLLABLES _____ TURQUOISE PRONUNCIATION _____ ORANGE PART OF SPEECH _____ GREEN	ANSWERS SYNONYM : SADNESS PINK ANTONYM : EXHILARATION YELLOW NUMBER OF SYLLABLES : FOUR TURQUOISE PRONUNCIATION: 'mel-ən-kȧl-i ORANGE PART OF SPEECH : NOUN ADJECTIVE GREEN
VALIANT SYNONYM : BRILLIANT COURAGEOUS SOLID PINK ANTONYM : TIMID DULL NEITHER YELLOW NUMBER OF SYLLABLES _____ TURQUOISE PRONUNCIATION _____ ORANGE PART OF SPEECH _____ GREEN	ANSWERS SYNONYM : COURAGEOUS PINK ANTONYM : TIMID YELLOW NUMBER OF SYLLABLES : TWO TURQUOISE PRONUNCIATION : 'val-yent ORANGE PART OF SPEECH : ADJECTIVE NOUN GREEN
JUDICIOUS SYNONYM : IMPULSIVE SENSIBLE ORIGINAL PINK ANTONYM : FAMILIAR RECKLESS NEITHER YELLOW NUMBER OF SYLLABLES _____ TURQUOISE PRONUNCIATION _____ ORANGE PART OF SPEECH _____ GREEN	ANSWERS SYNONYM: SENSIBLE PINK ANTONYM : RECKLESS YELLOW NUMBER OF SYLLABLES : THREE TURQUOISE PRONUNCIATION : jü-dish-əs ORANGE PART OF SPEECH : ADJECTIVE GREEN

Appendix E

SCORING DEVICE

Name_____

KEEP YOUR OWN SCORE

CIRCLE YOUR POINTS AS YOUR EARN THEM:

99	89	79	69	59	49	39	29	19	9
98	88	78	68	58	48	38	28	18	8
97	87	77	67	57	47	37	27	17	7
96	86	76	66	56	46	36	26	16	6
95	85	75	65	55	45	35	25	15	5
94	84	74	64	54	44	34	24	14	4
93	83	73	63	53	43	33	23	13	3
92	82	72	62	52	42	32	22	12	2
91	81	71	61	51	41	31	21	11	1
90	80	70	60	50	40	30	20	10	0

This scoring device was used as follows. Suppose a student has circled 35 on this device as his score. He earns 8 more points. He can do one of two things: (1.) add 35 and 8 and get 43, or (2.) he may silently tap 36 as "one", 37 as "two", 38 as "three", 39 as "four", etc., until he taps the 8th number, which will be 43.

APPROVAL SHEET

This thesis, submitted by Mary Quinlan, has been read and approved by the following committee:

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The final copies have been examined by the director of this thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts in Education.

July 5, 1978
Date

Lois M. Lackner
Director's Signature