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Teaching Map Concepts to Poor Readers

Cynthia J. Meadows
University of North Florida

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UNIVERSITY OF NORTH FLORIDA

TEACHING MAP CONCEPTS TO POOR READERS

INDEPENDENT STUDY

May 1979

Cynthia J. Meadows

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INTRODUCTION

There is a concern that children with poor, i.e., below grade level reading ability, have trouble in content area subjects. The subjects of social studies, science, and health are often taught in the elementary grades through the use of textbooks. Because these texts prior to 1979 were written with a readability level at or above the grade level for which the book was designed, the poorer reader cannot read, and therefore learn, the subject matter presented.

Children need knowledge of these content areas to function in today's society. They also need the ability to read to increase their knowledge and to develop their interest in these areas. Our society also expects that certain aspects of social studies, science, and health will be taught to children. As teachers there is a responsibility to teach these objectives. The children are also graded and evaluated at the end of each school year in these subject areas. They, therefore, must acquire this knowledge to perform well on these tests. However, children with poor reading ability face difficulties acquiring this knowledge through a textbook oriented curriculum.

The problem to be dealt with in this project is how to teach social studies to children with poor reading ability. The objective is to aid these

children in obtaining an understanding of specific social studies concepts. Few materials in the content area are available in Duval County for working with the reader who is below grade level.

Specifically, this project will develop a curriculum of teaching techniques and materials to use with third-graders in the social studies area of map skills. This area was chosen because it is tested extensively on the third-grade Stanford Achievement Test. These materials will be used with a class of thirty third-grade students at Hyde Grove School in Duval County, Florida. These students are poor readers who read at least one grade level below their current grade in school, as measured by the Stanford Achievement Test reading section. The curriculum will attempt to facilitate map concept attainment for these children.

DEFINITION OF TERMS

Concept: A concept is an idea formed by the categorization of a number of observations. Concepts have the aspects of name, definition, examples and characteristics.¹

Deductive teaching: Deductive teaching is a method of teaching in which a concept is presented and then supported by observations.

Inductive teaching: Inductive teaching is a method of teaching in which observations are made and categorized into a concept.

Inquiry method: The inquiry method of teaching is a type of teaching in which guided questioning of the students by the teacher produces the desired knowledge. The questioning techniques fall into the broad categories of inductive or deductive teaching.

Poor readers: This phrase will be used for children who read at least one year below grade level. This has been ascertained by a grade level score on the reading section of the Stanford Achievement Test and also by teacher judgment.

¹Paul D. Eggen, Donald P. Kauchak, and Robert J. Harder, Strategies for Teachers Information Processing Models in the Classroom (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1979), p. 40.

Process skills: These skills are used when children use data to do something. An example of process skills is knowing why Columbus came to America.

Product knowledge: This knowledge is a knowledge of facts. An example of product knowledge is "Columbus discovered America in 1492."

Relative direction: Relative direction is the direction of a feature on a map in relation to another feature.

Teacher judgment: This phrase is used in relation to the teacher's view of a child's grade level ability in reading. This judgment may be based on informal observations of the child's school performance and on an informal reading inventory administered by the teacher.

REVIEW OF THE RELATED LITERATURE

There is a problem in teaching social studies to poor readers. As Blake states, children with poor reading ability will "psychologically resign"² from certain subjects because they cannot read them. Special reading skills are necessary for effective social studies learning. Blake, Johnson, Mahoney, Lunstrum, Duscher, Rowell, Potter, and Gillespie³ list special reading skills for the teaching of social studies, such as teaching vocabulary, word recognition, comprehension skills, and study skills. These educators also present methods of teaching these skills.

²Sylvia Blake, Teaching Reading Through Social Studies and Science Materials (ERIC Document Reproduction Service, ED 123 564, 1975).

³Ibid., p. 6; Roger E. Johnson, Reading as It Relates to the Teaching of Social Studies: A Social Studies Teacher's Point of View (ERIC Document Reproduction Service, ED 076 963, 1973); Joseph E. Mahoney, Improving Reading Skills in Social Studies, How to Do It in Series (ERIC Document Reproduction Service, ED 139 724, 1977); John P. Lunstrum, "Improving Reading in the Social Studies", Social Education 42 (January 1978): 8-9; Raymond Duscher, "How to Help Social Studies Students Read Better", Social Studies 66 (November 1975): 258-61; C. Glennon Rowell, "Vocabulary Development in the Social Studies" Social Education 42 (January 1978): 10-14; Sandra Potter, "Social Studies for Students with Reading Difficulties", Social Studies 69 (May/April 1978): 58-64; and Margaret Catherine Gillespie, "A Content Analysis of Selected Fifth Grade Basal Readers and Fifth Grade Social Studies Texts", Dissertation Abstracts 27: 4164A, 1967, cited by Maxine Dunfee, Elementary School Social Studies: A Guide to Current Research (Washington, D.C.: Association for Supervision and Curriculum Development, 1970).

These methods include diagnosing the level of each student, expanding the special vocabulary of the subject, teaching the children to read for a purpose (i.e., skimming for basic ideas or reading to discover a specific detail), and ways of adapting the text to the student's level.

Not only are these special reading skills needed by low achievers when they are learning social studies material, but the social studies concepts being taught need to be based on a child's previous experience. Spache and Spache assert that all children's learning must be based on experiential background.⁴ Many low achievers lack a wide range of experiences. Hanna, Sabaroff, Davies, and Farrar in their book note that experience of children must underlie the concepts to be learned so the children can reach understanding.⁵

However, textbooks do not deal with experiential background of the student so children may have trouble developing understanding of the material. Chew points out that textbooks base much of their content solely on product knowledge.⁶ Lyda and Robinson imply that textbooks are

⁴George D. Spache and Evelyn B. Spache, Reading in the Elementary School (Boston: Allyn and Bacon, 1977), pp. 463-64.

⁵Paul R. Hanna, Rose E. Sabaroff, Gordon F. Davies, and Charles R. Farrar, Geography in the Teaching of Social Studies: Concepts and Skills (Boston: Houghton Mifflin Company, 1966), p. 59.

⁶Victoria Chew, "Social Science Generalizations in Selected Second-Grade Textbooks", Dissertation Abstracts 27: 2438A, 1976, cited by Dunfee, Elementary School Social Studies, p. 54.

inadequate in teaching concepts to low achievers since high achieving students understand 3/4 of the concepts presented and low achievers understand only 1/4 of the concepts presented.⁷ Gornick has found a significant increase in low achievers' progress when they are taught through concept learning models. Therefore, he feels concepts are of great importance in teaching content areas to low achievers.⁸

Content areas taught through concept learning helps the student organize the world. Bruner states that concept learning helps children by building a cognitive structure on which to base continued learning.⁹ Jarolimek; and Klausmeier, Ghatala, and Frayer¹⁰ suggest that the development of concepts helps children categorize, classify, generalize, apply, relate, and transfer knowledge.

⁷W. J. Lyda and Verna A. Robinson, "Quantitative Concepts in Selected Social Studies Texts", The Elementary School 65 (December 1964): 159-62, cited by Dunfee, Elementary School Social Studies, p. 55.

⁸W. C. Gornick, "A Study of Relationships Between a Concept Framework and Transfer of Learning", Dissertation Abstracts 29: 511A, 1968.

⁹Jerome Bruner, Toward a Theory of Instruction (Cambridge: Harvard University Press, 1966).

¹⁰John Jarolimek, "Conceptual Approaches: Their Meaning for Elementary Social Studies", Social Education 30 (November, 1966): pp. 534-36, cited by Jonathon C. McLendon, William W. Joyce, and John R. Lee, Readings on Elementary Social Studies: Emerging Changes (Boston: Allyn and Bacon, Inc., 1971), p. 63; and Herbert J. Klausmeier, Elizabeth Schwenn Ghatala, and Dorothy A. Frayer, Conceptual Learning and Development: A Cognitive View (New York: Academic Press, 1974), p. 7.

Piaget argues that the teaching of these concepts needs to be based on the child's maturational development.¹¹ Klausmeier, Ghatala, Frayer; Martorella; Taba, Durkin, Fraenkel, and McNaughton¹² support this viewpoint when they note that slow learners may need to develop concepts first on the concrete level and later, through a sequence of skills, they may reach more abstract levels.

Not only do teachers need to sequence learning for children according to the child's maturational level, but they must learn the techniques of questioning to teach concepts, say Taba, Durkin, Fraenkel, and McNaughton; Ausabel; Suchman; and Bruner.¹³ These questioning techniques are formed around the inquiry method of teaching, using variations of the inductive and deductive models of teaching. The final product, according to Fraenkel, should be that the child can receive the information,

¹¹Jean Piaget and Barbel Inhelder, The Child's Concept of Space (London: Routledge and Kegan Paul, Ltd., 1963).

¹²Klausmeier, Ghatala, and Frayer, Conceptual Learning, pp. 15-21; Peter H. Martorella, Concept Learning in the Social Studies Models for Structuring Curriculum (Scranton: Intext Educational Publishers, 1971), p. 36; and Hilda Taba, Mary C. Durkin, Jack R. Fraenkel, and Anthony H. McNaughton, A Teacher's Handbook to Elementary Social Studies An Inductive Approach (Reading, Mass.: Addison-Wesley Publishing Co., 1971), pp. 38-41.

¹³Ibid., Taba, Durkin, Fraenkel, and McNaughton, p. 65; David P. Ausabel, The Psychology of Meaningful Learning (New York: Grune and Stratton, 1963); Richard J. Suchman, The Elementary School Training Program in Scientific Inquiry (Research Project 216; Washington, D.C.: U.S.O.E., 1962); and Jerome Bruner, The Process of Education (Cambridge: Harvard University Press, 1960).

organize it, demonstrate its uses, express the concept in new terms, and use the information in a totally different situation.¹⁴

This method of teaching concepts through inquiry can be used for teaching map skills. Kohn maintains that teaching map skill concepts will help children develop spatial comprehension and help them in making decisions pertinent to being a responsible citizen.¹⁵ Meyer lists three justifications for teaching map skills to elementary children. They are: to facilitate map use in everyday life, to enable geographical study, and to provide a graphic tool for less verbal students to represent their concepts pictorially.¹⁶ Based on these justifications, map concepts must be identified to be taught to children. Rago lists five basic map skills concepts: the concepts of location and relative location, knowledge of symbols, understanding of scale, and comprehension of the map and globe as models.¹⁷ Tabachnick, Weible, and Frayer give an extensive and more

¹⁴Jack R. Fraenkel, Helping Students Think and Value: Strategies for Teaching (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1973), pp. 159-60.

¹⁵Clyde F. Kohn, Curriculum Change: Accent on Geography, address to National Council for Geographic Education, 1968, cited by McLendon, Joyce, Lee, Readings on Elementary Social Studies, pp. 92-93.

¹⁶Judith M. W. Meyer, "Map Skills Instruction and the Child's Developing Cognitive Abilities", Journal of Geography 72 (September 1973): 27.

¹⁷U. Frank Rago, "Making and Using Audiovisuals", The Instructor (March 1967): 111-12, cited by McLendon, Joyce, Lee, Readings on Elementary Social Studies, pp. 460-61.

specific list of map and globe concepts including area, boundary, continent, direction, scale, physical features, and cultural features.¹⁸

Berger and Winters discuss some specific methods of teaching these map concepts. They suggest beginning the teaching of map skills by using a model of the children's classroom.¹⁹ Watts found that using models helped in the teaching of map skills more than using photographs, verbal definitions, or filmstrips.²⁰ She suggests that the teacher start the teaching of map skills by having the children make a map of a well-known area; the next steps in teaching are helping children read and interpret a map made by someone else.²¹

Specific techniques for the teaching of geography are also discussed in the literature. Larkin and Grogger, for example, list specific

¹⁸B. Robert Tabachnick, Evelyn B. Weible, and Dorothy A. Frayer, Selection and Analysis of Social Studies Concepts for Inclusion in Tests on Concept Attainment (ERIC Document Reproduction Service, ED 051 310, 1970), p.3.

¹⁹Evelyn Berger and Bonnie Winters, Social Studies in the Open Classroom A Practical Guide (New York: Teachers College Press, 1973), p. 43.

²⁰Ann Robin Watts, "Conceptual Clarification of Certain Geographic Terms Through the Use of Five Presentation Modes" Dissertation Abstracts 26: 1519 1965, cited by Dunfee, Elementary School Social Studies, p. 67.

²¹Meyer, "Map Skills Instruction", p. 31.

games and orienteering techniques to teach map concepts.²² Crabtree has developed and field tested a primary grade geography curriculum. The curriculum was based on the geography of the Los Angeles area. The children took many field trips to broaden their experiences and to relate to the concepts learned in the classroom.²³

A review of the literature cited above indicates that the problem of teaching social studies to poor readers may be solved by a combination of techniques. The reading material used with the children must be on their level. Children could be taught pertinent skills for social studies reading. The learning must be based on the children's experiential background. According to the literature, concept learning models may be the most useful method of teaching to low achievers. The concepts must be taught through a sequence of levels beginning on the concrete level. Concepts need to be taught through the questioning techniques of inquiry. The combination of these techniques may increase the child's product and process knowledge in social studies. Therefore, it seems appropriate to develop a curriculum combining these methods.

²²Robert P. Larkin and Paul K. Grogger, Map and Compass Skills for the Elementary School (ERIC Document Reproduction Service, ED 138 529, 1975).

²³Charlotte Crabtree, Teaching Geography in Grades One Through Three: Effects of Instruction in the Core Concept of Geographical Theory (ERIC Document Reproduction Service, ED 021 869, 1968).

PROCEDURES

The implementation of the curriculum was begun on Monday, April 23, 1979, by the administration of the pre-test. The children were encouraged to read the test on their own and ask for help from the teacher when encountering a word they could not pronounce. The children were quickly frustrated by this test because the map concepts tested were not understood by them and these children did not like to attempt anything at which they cannot easily be successful. The children had to be encouraged throughout the test to attempt answers they did not know. The tests were scored for a total amount correct on each concept and a total amount correct on the entire test.

The first lesson dealt with the concept of maps as models of reality. The lesson was inductive using examples and non-examples of reality. The generalization that some objects are real and some objects are pictures of real things was induced after the first example and non-example were presented. The children were 100% successful in naming objects that were real or objects that were symbols of reality.

The second lesson dealing with maps as models was much less successful. The generalization presented was that maps represent reality.

This was a flawed generalization because maps can be drawn of imaginary areas. The statement could be rewritten or this lesson could be totally omitted. The children seemed bored with verifying and re-verifying the generalization.

The third lesson was presented as an inductive lesson based on Suchman's model.²⁴ The problem presented to the children was interesting to them but they were unable to understand verifying their thoughts by asking questions of the teacher. Further Suchman lessons seemed to prove that this model was too complicated for these children. The children were able to think of many other situations where maps would help people locate objects. The children were asked to make a map of the classroom to help solve the situation presented. After watching the children flounder, unable to even begin making a map, specific instructions were given by the teacher. Key items were picked throughout the room and finally 1/3 of the map was completed by the children alone. 90% of the children were able to make a map of the room. Only two children showed any interest in trying to perfect their maps at a later time.

²⁴The Suchman model was developed by Richard J. Suchman. This model is based on the inquiry method of teaching. The teacher presents a problem situation to the students and they are to solve the problem by asking the teacher questions to verify, examine, and explain the situation. These questions must be asked in such a manner that the teacher can answer only yes or no.

The first lesson dealing with the concept of map legends was taught through the Suchman model. The situation and maps presented to clarify the situation, were interesting to the students; however, the Suchman model again proved to be too complex and seemed counter-productive for this particular class. The children were able to produce the generalization that map legends tell the meaning of the map symbols. This lesson could have been presented as an example and non-example lesson using the same situation. The ditto for reinforcement of the generalization was interesting to the children. They were able to understand and apply the knowledge of the use of map legends. 90% were able to match 100% of the symbols with the words in the legend. However, only four of the seven questioned were able to recall the generalization of the reason for map legends.

The following lesson using a map of an imaginary town again showed the ability to understand and apply the generalization about map legends, but no one could repeat the generalization. The children showed the same ability to apply the generalization when the reinforcement lesson using a map was presented.

The two final lessons on map legends were Suchman model lessons. Again the same problem of using this model appeared. The children, when drawing a map of their block, had to be coached to place a legend

on the map. Many were unable to place in the roads near their houses because they did not know the names of them. Several drew pictures of their houses. The houses were put on street symbols but had grass, flowers, and people in the yards. The drawing of such a map needs to be taken step by step with these children. However, 87% were able to make a map and 57% were able to make and use a map legend. Using the best maps made by two of the children, the class was able to find that child's house, street, and to describe the surrounding features. The reinforcement lesson showed that 75% of the class was able to use the legend with 100% accuracy.

The first lesson on physical and cultural features was presented deductively. The children were able 100% successfully, to name the definition of both physical and cultural features and to give examples of each. The evaluation of the lesson showed that 89% were able to distinguish 100% of the features as physical or cultural.

The second lesson of physical and cultural features required the students to pick out features from a map and to distinguish them as physical and cultural. Most children were able to distinguish between these when asked. Then the children were told to make a map of their block and place two physical and two cultural features in it. 93% were able to make the map; 100% were able to make and use a legend; but only

20% were able to place two physical and two cultural features in the map.

The third lesson on features used a ditto with a long explanation. Due to their repeated frustration and poor ability in reading, the children did not try to read the instructions so the teacher had a child read the directions aloud. Many of the children still did not understand the directions so the teacher then explained them. This worksheet showed that 50% of the children were 100% successful in distinguishing between physical and cultural features. The children were then asked to make a map of an imaginary town. 96% of the children were able to make a map; 96% were able to make and use a legend; and 73% were able to put two physical and two cultural features in the map.

The first lesson on direction was an inductive lesson with directions posted in the classroom. The children were able to locate directions. They developed a generalization for finding each direction in the room. Most were able to name the direction while standing twenty feet outside the classroom. However, when the children walked a block down the school campus, only seven were able to name the directions.

The second lesson on direction began by reviewing the generalizations for finding direction in the classroom. Only four children were unable to name the generalization. All were able to point to the directions in the

room. When they were given a map of the classroom, 93% were able to place the correct directions on the map. When the children were asked to draw a map of the classroom and put in the directions only 54% were able to do this. However, thirteen of the sixteen who did not put the directions on the map correctly did not put any directions on their maps.

The third lesson on direction was found to be repetitive and was combined with the fourth lesson. The children reviewed the generalizations made about direction in the room. Then they were given the generalizations for finding directions on most maps. When these generalizations were discussed and validated orally the children were able to locate the relative direction of most features. When the lesson was presented on a ditto and done individually 83% were able to locate the relative direction of two features. The reinforcement lesson proved to be too complicated for the children to understand and was deleted.

The lesson used as a culminating activity was one in which the children were asked to draw a map of an imaginary town and use many of the concepts taught in this unit of skills. The children were led specifically through the steps necessary to complete this map. 92% of the children were able to draw the map; 94% were able to make and use a legend; 79% were able to put two physical and two cultural features

in the map; and 57% were able to place all four directions in their proper places on the map. This lesson seemed enjoyable to the students and most were proud to show their maps to other children.

FINDINGS

The hypothesis for this unit was that the performance of the students on the post-test should be better than the performance on the pre-test due to the exposure of the students to the unit. Therefore, the null hypothesis would be: There will be no difference in the performance of the students before or after their exposure to the unit of study. Because a pre-test and post-test model was used in this study a t-ratio was judged to be appropriate for these correlated samples. The critical region was $t \geq -2.500$. Due to the prediction of the hypothesis, it was expected the difference of scores would be negative and the critical region would consist of all values of $t \geq 2.500$.

The value of t was found to be -22.309. (See Table 1.) The value of t was greater than 2.500, therefore, it was significant at the 0.01 level. Thus the null hypothesis is rejected.

Review and comparison of scores on the pre-test and post-test showed that the unit was successful. There was a mean gain in scores of fifteen points. All children were able to better their scores by at least ten points. Six items on the post-test were mastered by all the children. Four additional items were mastered by all but one of the

children. Conversely, the pre-test showed only four items missed by less than eight of the students.

Careful study of the post-test showed two areas in which the children were unsuccessful. The students missed two of the recall of fact questions, more frequently than any other items on the post-test. However, the items testing the understanding and application of the two concepts were missed by less than five children. Apparently the recall of facts was not contingent to understanding and applying the concept. Secondly, the items next missed most frequently, were the items on understanding and applying the concepts of direction and relative direction. Conversely, all students were able to recall the facts on the concept of direction by 100%.

Several other factors influenced the unit in a negative manner. A problem the teacher had not anticipated was that the children showed a need to be highly structured by teacher directions when making their maps. The teacher expected that the children had been introduced to a sufficient number of maps to enable them to easily master making a map of their own. This proved to be a fallacy and the children had to be instructed in a step by step procedure when making maps of their own. This need for structure might also have caused the problem seen repeatedly in the Suchman model lessons. The children found it hard to verify an explanation

by asking questions of the teacher. They seemed to feel the need to have the teacher structure the lesson by asking them questions.

The poor listening skills of the children also were a hindering influence to the success of the lesson. A successful Suchman lesson requires careful listening to the situation presented and then careful listening to peers. The children seemed unable to do this. The children are accustomed to paper-pencil lessons and found it hard to listen and participate in a discussion. The children frequently did not listen to the problem situation carefully nor did they listen to their peers.

Some of the dittos influenced the unit negatively because of the length of the directions. The dittos sometimes reiterated previously learned knowledge before giving the directions. Even though the children were presented with the special vocabulary needed for this reading; the reading was on the children's reading level; and the children were given a purpose for the reading, many children would not attempt to read or understand the instructions due to the length of the passage.

Distinction between aerial pictures and maps was another problem not anticipated by the teacher. Many of the children's first map attempts contained movable objects such as people and cars or tiny objects such as grass, which are not normally placed in maps. Later map making showed that some children perceived this difference but many children did not develop this generalization.

Several other problems influenced this unit. The unit was presented at a very inopportune time. The children had just finished taking the Stanford Achievement Test and knew they were soon beginning the Essential Skills Test. They were emotionally tired due to the stress placed on them to succeed on these tests. The class exhibited very poor self-control due to their repeated learning problems in school. The teacher was also plagued by repeated interruptions from the administrative office and there were frequent absences and tardiness among the children negating some of the teaching.

MAP SKILLS SCORES

<u>Before X₁</u>	<u>After X₂</u>	<u>D</u>	<u>D²</u>
19	32	-13	169
18	31	-13	169
18	31	-13	169
16	28	-12	144
16	31	-15	225
15	25	-10	100
15	29	-14	196
15	31	-16	256
14	32	-18	324
13	32	-19	361
13	26	-13	169
13	28	-15	225
13	29	-16	256
13	25	-12	144
12	28	-16	256
12	25	-13	169
11	30	-19	361
11	33	-22	484
11	27	-16	256

TABLE 1

A comparison of map skill scores for third grade students.

<u>Test</u>	<u>Number</u>	<u>D</u>	<u>Sum of D²</u>	<u>\bar{D}</u>	<u>$\frac{S}{D}$</u>	<u>t</u>
Pre-	24	-384	284	-16	.717	-22.309
Post-	25					

Before X_1	After X_2	D	D^2
<u>11</u>	<u>26</u>	-15	225
10	31	-21	441
8	30	-22	484
8	27	-19	361
<u>6</u>	<u>28</u>	<u>-22</u>	<u>484</u>
311	695	-384	6428

IMPLICATIONS

Positive implications of this unit are illustrated by the success of the children on the post-test. The importance of teaching concepts to low achievers supported Gornick's findings. The inquiry method challenged the children and supported the beliefs of the advocates of this method of teaching. Success was also due to the use of practical situations based on the children's experience as Berger and Winters have suggested.

Negative implications based on the findings of this study must be discussed. The ability of the children to understand and apply a concept without being able to recall the facts of the concept may imply that these recall items did not need to be tested even though they should be taught.

The problem shown with the understanding and applying of the concept of direction and relative directions implied the need of more exposure to this particular higher level concept. Therefore, children needed more practice in placing directions on a map and in locating the relative direction of a feature in relation to another, to develop the understanding of this concept.

There were other implications for the improvement of this unit of study. Sequencing and careful structuring of the lessons was found to be necessary for this particular class. The Suchman model should not be used with children needing much teacher-directed structure. The problem situations could be presented in the same manner but explanation of these situations could be handled differently through teacher guided questioning.

The development of better listening skills was another need implied to improve this unit. Practice using the inquiry method would be one manner of improving listening skills in content areas. Lessons with the objective of developing these skills should also be taught.

Reading of content area material caused negative influences on parts of the unit. Contrary to the literature, presenting the special vocabulary; presenting material on the children's reading level; and specifying the purpose for reading did not seem to help these children in reading content material. The length of the passage was a partial cause for this problem. The implications are that: the reading passages should be shortened; the material read could be related more specifically to the particular concept being dealt with; and the children could use more practice in attempting to read content area material.

Another implication was the need to distinguish between aerial pictures and maps. This problem of distinction between the two ought to be dealt with through a set of lessons taught early in the implementation of the unit. If the children were presented with this generalization of the difference between the two, fewer pictures containing movable objects and minute details would be seen; and more maps might be developed.

Many other negative influences on the unit did not produce any implications for improving the unit but seemed to be normal problems in teaching. The teacher must deal with children who have learning problems. Classroom interruptions, absences, and tardiness were not within the realm of teacher control but they did influence the teaching of the unit.

A final implication for the improvement of this unit would be to use a control group. This would be used as a means of ascertaining that the gain in the performance of the students, was due to the implementation of the unit. This might be attempted at a later date.

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MAP SKILLS OBJECTIVES

MAPS AS MODELS

1. The student will be able to pick, from a presentation of objects, photographs, pictures, and maps, those which are symbols and those which are "real" objects.
2. The student will be able to pick, from a list of definitions, the definition of maps.
3. The student will be able to draw a simple map of the classroom.
4. The student will be able to draw a simple map of her yard and block.
5. The student will be able to draw a simple map of an imaginary town.
6. The student will be able to draw a simple map of the school's playing field.

MAP LEGENDS

1. The student will be able to pick, from a list of reasons, the reason maps need legends.
2. The student will be able to label the symbols from a map legend as the objects they symbolize.
3. The student will be able to develop a legend on his map of his yard and block.

4. The student will be able to develop a legend on a map of an imaginary town.

PHYSICAL AND CULTURAL FEATURES

1. The student will be able to pick, from a list of definitions, the definition of both physical and cultural features.

2. The student will be able to label, on a map of her block, the physical and cultural features.

3. The student will be able to label, on a map of an imaginary town, the physical and cultural features.

DIRECTION

1. The student will be able to name the four directions.

2. The student will be able to name the four directions on his map of the classroom.

3. The student will be able to name the relative direction of features in relationship to the classroom.

4. The student will be able to name the relative direction of features in relationship to a stationary position on the school's playing field.

5. The student will be able to draw an imaginary town and place the four directions on this map.

6. The student will be able to name the relative direction of different features on the map of an imaginary town, in relation to one feature.

TABLE OF SPECIFICATIONS

<u>Concepts</u>	<u>Recall</u>	<u>Understanding</u>	<u>Application</u>	<u>Total</u>
Maps as models	4%	18%	3%	25%
Physical and cultural features	6%	18%	6%	30%
Legends	3%	12%	3%	19%
Direction	12%	12%	3%	27%
Total	25%	60%	15%	100%

TEST ON MAP SKILLS

Name _____

1. A map is a:
 - a. picture of a house.
 - b. model of real things.
 - c. real thing.
 - d. picture of a neighborhood.

2. Put the objects in the column they belong:

<u>Real</u>	<u>Symbol</u>
_____	_____
_____	_____
_____	_____

3. A physical feature is:
 - a. something built by man.
 - b. something made by nature.

4. A cultural feature is:
 - a. something built by man.
 - b. something made by nature.

5. List three physical features on the map.

1. _____
2. _____
3. _____

6. List three cultural features on the map.

1. _____

2. _____

3. _____

7. Why do maps have legends?

a. to tell what a picture means

b. to tell direction

c. to tell the street names

d. to tell what each symbol means

8. Name what this symbol on the map means:

9. Name what this symbol on the map means:

10. Name what this symbol on the map means:

11. Name what this symbol on the map means:

12. Name the four directions:

1. _____

2. _____

3. _____

4. _____

13. What building on the map is north of the church?

14. What street on the map is south of the school?

15. What feature on the map is east of the park?

16. What street on the map is west of the church?

17. Draw a map of an imaginary town on this sheet. Put in the four directions. Put in two physical and two cultural features. Make a legend for your map.

MAPS AS MODELS

Lesson 1

Concept: Some objects are real and other objects represent real things .

Objective 1

Rationale: Students need this concept to underlie the map skills unit. Practice thinking skills .

Activity:

Introduction: Set the scene for a lesson of example and non-example .

Lesson: Present examples and non-examples .

Examples: models of the ear and the eye, a map of the city and the state, a picture of animals

Non-examples: pencil, desk, person, scissors, paper, and door

Give the first three examples and non-examples .

Ask for a yes or no answer on each of the examples and non-examples .

Ask for a validation of these answers .

Ask for the generalization .

Evaluation: Ask for other examples and non-examples and verify them according to the generalization .

MAPS AS MODELS

Lesson 2

Concept: Maps represent reality.

Objective 2

Rationale: Understand the use of maps. Practice thinking skills.

Activity:

Introduction: Present the generalization that maps represent reality. Review previous lesson.

Lesson: Present various maps and validate them according to the generalization. Present various real objects and maps and validate them with the generalization.

Evaluation: Elicit examples from the children. (Suggest they find maps and bring them to the classroom.)

MAPS AS MODELS

Lesson 3

Concept: Maps help people locate things.

Objective 3

Rationale: Practice thinking skills. Understand the use of maps.

Activity:

Introduction: Set up premise of Suchman lesson.

Lesson: Present the problem: Ms. Meadows is having a substitute in the class. The sub needs to know where each child sits and what each child's name is. How can Ms. Meadows show this to the sub when she is not there?

Ask for questions with a yes or no answer for verification, for experimentation, and for explanation of the problem.

Analyze which questions helped yield the explanation and which didn't help.

Evaluation: Ask the children to develop other situations when a map could be used. Have the children make a map of the classroom.

MAP LEGENDS

Lesson 1

Concept: Map legends tell the meaning of their symbols.

Objective 1

Rationale: Practice thinking skills. Develop a reason for legends.

Activity:

Introduction: Set up the premise for a Suchman lesson.

Lesson: Present the problem: Kenny needs to get to Luther's house. Luther gives Kenny this map. Why can't Kenny find Luther's house?

Ask for questions of verification, of experimentation, and of explanation of the problem.

Analyze what questions helped and did not help give an explanation of the problem.

Evaluation: Present the problem: L'Tanya invited Felicia over to go swimming. She gave Felicia this map to find her house. Why is this map easier to use? Ask for questions to explain this problem. Use the ditto on map legends.

MAP LEGENDS

Lesson 2

Concept: Map legends tell the meaning of the map's symbols.

Objective 2

Rationale: Practice thinking skills. Develop a reason for map legends. Develop the ability to use map legends.

Activity:

Introduction: Present the generalization that map legends tell the meaning of the map symbols.

Lesson: Give each child a map of an imaginary town.

Ask children to find certain features on the map.

Validate the finding of these features with the generalization.

Ask children to find features that don't appear in the legend.

Validate this with the generalization. Ask for examples from the children.

Evaluation: Ask how to give a meaning to features on a map which don't appear in the legend. Use a ditto on map legends.

MAP LEGENDS

Lesson 3

Concept: Map legends tell the meaning of a map's symbols.

Objectives 1, 2, 3

Rationale: Practice thinking skills. Develop a reason for map legends. Develop the ability to use map legends.

Develop the ability to make map legends.

Activity:

Introduction: Set up the premise for a Suchman lesson.

Lesson: Present the situation: Ms. Meadows is going to visit each of your homes. She knows which street you live on but she needs to have an easy way to find the house. How could you help her? Ask for questions of verification, of experimentation, and of explanation for the problem.

Analyze which questions helped and did not help answer the problem.

Evaluation: Draw such a map of your block. Also use the ditto on map legends.

MAP LEGENDS

Lesson 4

Concept: Map legends tell the meaning of a map's symbols.

Objective 1, 2, and 3

Rationale: Practice thinking skills. Develop a reason for map legends. Develop the ability to use map legends.

Develop the ability to make map legends.

Activity:

Introduction: Set up the premise for a Suchman lesson.

Lesson: Present the problem: Jeff has invited the whole class to a party on Saturday. Using Jeff's map, how can we find the way?

Ask what parts of the map helped us.

Evaluation: Use another child's map the same way.

PHYSICAL AND CULTURAL FEATURES

Lesson 1

Concept: Physical features are natural. Cultural features are made by people.

Objective 1

Rationale: Develop thinking skills. Develop the ability to classify features as physical and cultural.

Activity:

Introduction: Present the definition of each type of feature and discuss the definition.

Lesson: Give a list of features: house, park, church, river, mountain, lake, school, road, and bridge.

Ask children to classify each and then verify it according to the definition.

Ask for children's examples of physical and cultural features.

Evaluation: Give children paper divided into two columns and have them list all the features discussed according to physical and cultural.

PHYSICAL AND CULTURAL FEATURES

Lesson 2

Concept: Physical features are natural. Cultural features are made by people.

Objective 1 and 2

Rationale: Develop thinking skills. Develop the ability to classify features as physical and cultural.

Activity:

Introduction: Review the definition of each type of feature. Using a map of an imaginary town, have the children pick out the physical and cultural features.

Lesson: Validate each feature the children pick out with the definition of physical and cultural features.

Evaluation: Have the children make another map of their own block and ask them to circle two physical and box two cultural features.

PHYSICAL AND CULTURAL FEATURES

Lesson 3

Concept: Physical features are natural. Cultural features are made by people.

Objective 1 and 3

Rationale: Develop thinking skills. Develop the ability to classify features as physical and cultural.

Activity:

Introduction: Review the definition of each type of feature. Using a map of an imaginary town have the children pick out the features.

Lesson: Validate each feature with the definition.

Evaluation: Using a ditto of an imaginary town have the children distinguish between physical and cultural features.

DIRECTION

Lesson 1

Concept: The four basic directions are north, south, east, and west.

Objective 1 and 2

Rationale: Develop thinking skills. Develop the concept of direction.

Activity:

Introduction: Present the names of the directions and their relative direction in the classroom.

Lesson: Present the example of facing and walking in each direction. Develop a generalization of the meaning of direction.

Validate the generalization by having various children illustrate the directions.

Validate the generalization in an outdoor situation near the classroom.

Evaluation: Validate the generalization in a third situation farther from the room.

DIRECTION

Lesson 2

Concept: Directions are shown on maps.

Objective 1 and 2

Rationale: Practice thinking skills. Develop the concept of direction. Develop knowledge of direction on maps.

Activity:

Introduction: Review the generalizations made previously. Using a map of the classroom discuss how to place directions on this map.

Lesson: Validate the directions with the generalizations.

Evaluation: Have the children make a map of the classroom and place the directions on their own maps.

DIRECTION

Lesson 3

Concept: Features have relative direction.

Objective 3 and 4

Rationale: Practice thinking skills. Develop the concept of direction. Develop the concept of relative direction.

Activity:

Introduction: Present the idea of showing direction in relationship to where we are.

Lesson: Ask children in what direction various objects outside the classroom are located.

Develop a generalization for finding their direction in relationship to where they are.

Evaluation: Take the children to the playing field and have them verify the generalization there.

DIRECTION

Lesson 4

Concept: Features on a map have relative direction to other features.

Objective 4 and 5

Rationale: Develop the concept of direction. Practice thinking skills. Develop knowledge of direction on maps.

Develop the concept of relative direction on a map.

Activity:

Introduction: Review the generalization about relative direction.

Lesson: Given a map of an imaginary town have the children give examples of relative direction and verify them with the generalization.

Elicit examples from the children to verify the generalization.

Evaluation: Using a ditto on direction have the children locate various features and their relative direction from one feature.

Culminating activity

Concept: Maps help people locate things.

Objective 1 of Maps as Models

Rationale: Practice thinking skills. Practical use of knowledge of map skills.

Activity:

Introduction: Inform children that they are going to use all the knowledge they have gained about maps.

Lesson: Ask children to draw a map of an imaginary town. Put in the four directions, two physical and two cultural features, and a legend.

Evaluation: Have the children show their map to another child and have the other child critique the map.

RAW SCORES

<u>Name</u>	<u>Pre-test</u>	<u>Post-test</u>	<u>Gain-score</u>
Vicki	16	28	12
Hattie	15	25	10
Michael	8	30	22
Ernest	6	28	22
La'Trenia	11	30	19
Jeff	11	33	22
Tracy	18	31	13
Tammy	19	32	13
Dana	13	32	19
Bryant	10	31	21
Phyllis	8	27	19
Allen	12	28	16
Jason	18	31	13
Karl	13	26	13
Kevin	13	28	15
Kenny	16	31	15
Michelle	13	29	16
Felicia	14	32	18

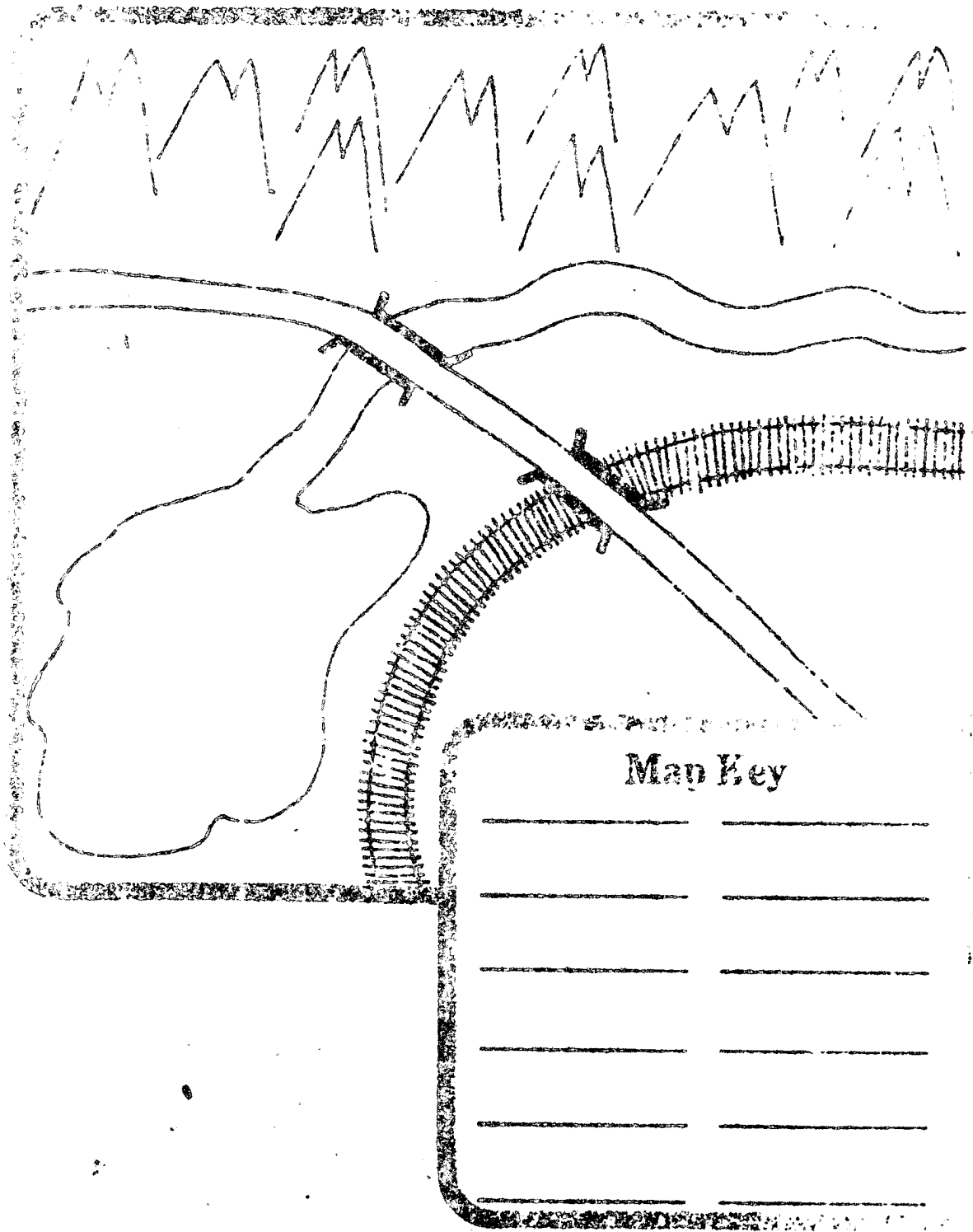
<u>Name</u>	<u>Pre-test</u>	<u>Post-test</u>	<u>Gain-score</u>
Sean	15	29	14
Gene	12	25	13
Shirley	13	25	12
L'Tanya	11	27	16
Sammy	15	31	16
Scott	11	26	15

MEAN SCORES

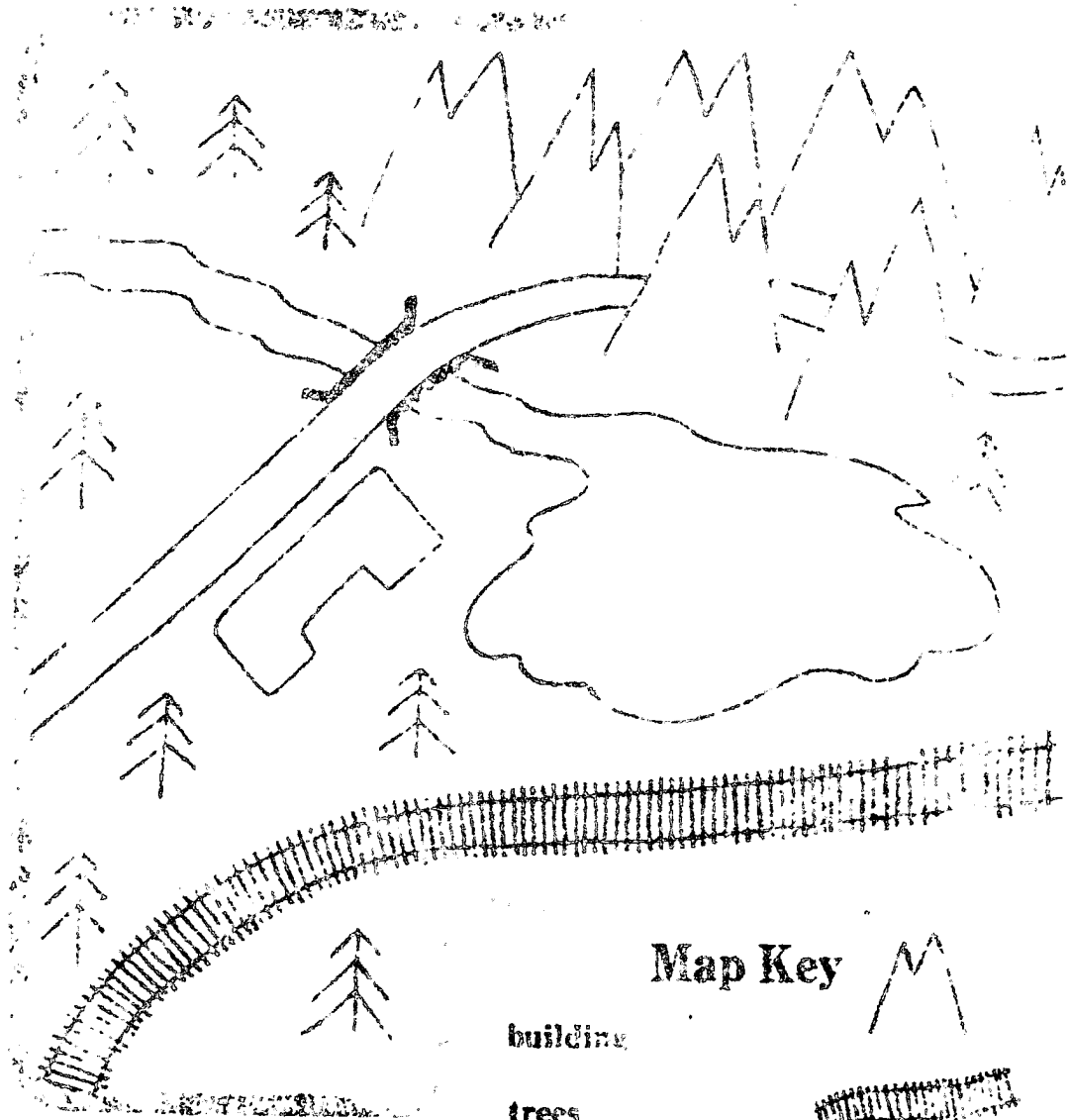
Pre-test mean score: 12.958

Post-test mean score: 28.958

Gain-score mean: 15.555



Imagine you are going on a vacation. This is a map of where you plan to go. On the map there are six symbols. But there is no key. Make a key for this map. Draw and label each symbol shown on the map.



Map Key

building

trees

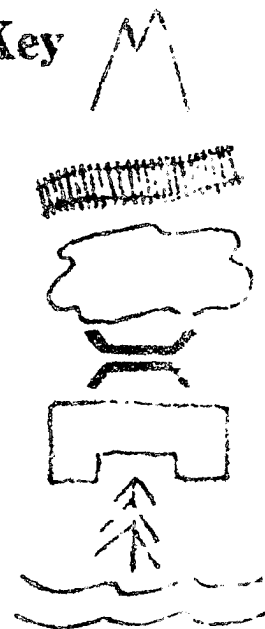
mountains

river

railroad

bridge

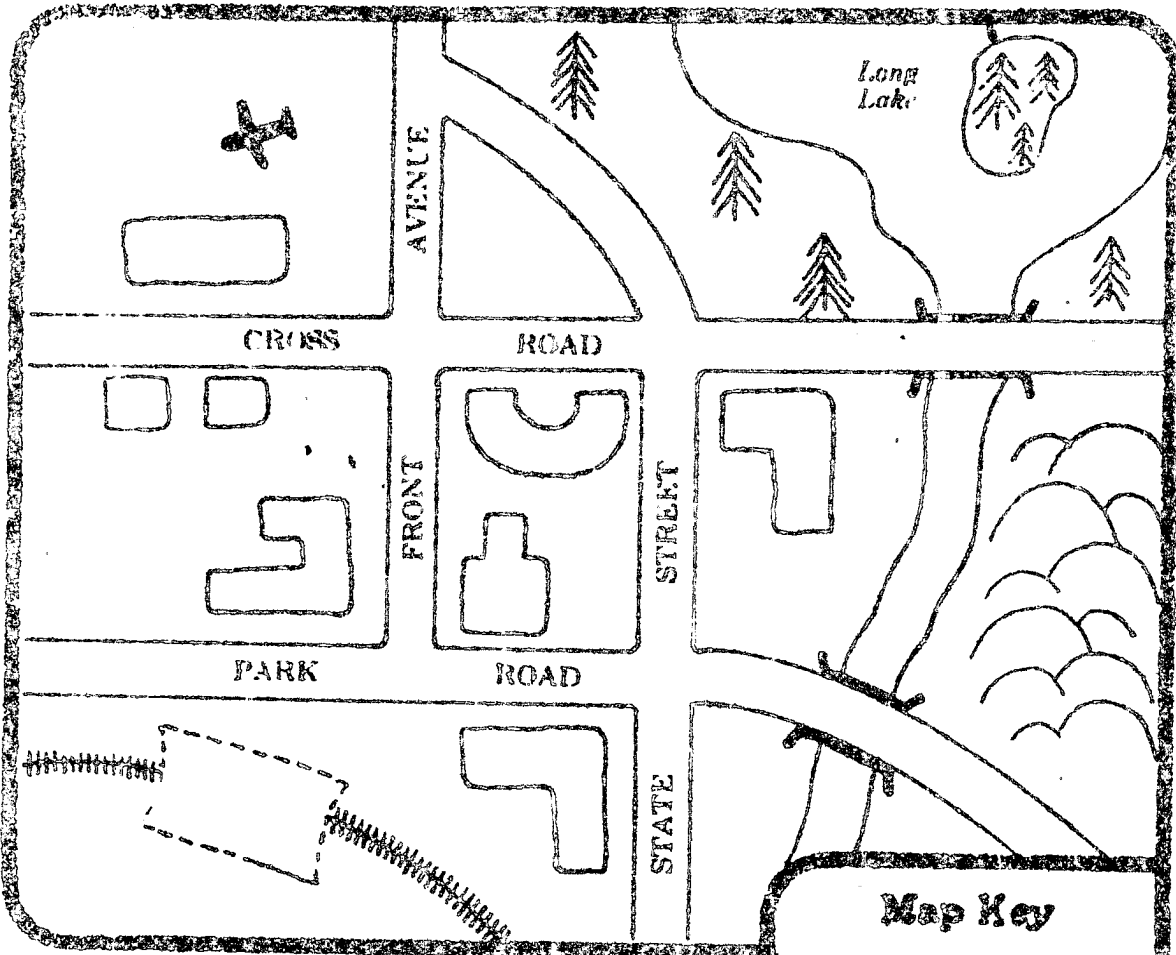
lake



The symbols in this map key are all mixed up. Draw a line and match the symbols with the words.

Maps Use Keys







Map makers use many of the same symbols for every map. Some are used so often, map makers expect you to know them. However, when a map shows special symbols for important things, it usually lists them near the bottom of the map. This list is called the **KEY** or **LEGEND**. It gives the meaning of the important symbols not labeled on the map itself.



Circle those things shown on this map.

- | | |
|-----------|--------|
| buildings | hills |
| mountains | bridge |
| railroad | forest |
| airport | tunnel |
| highway | lake |

Map Key

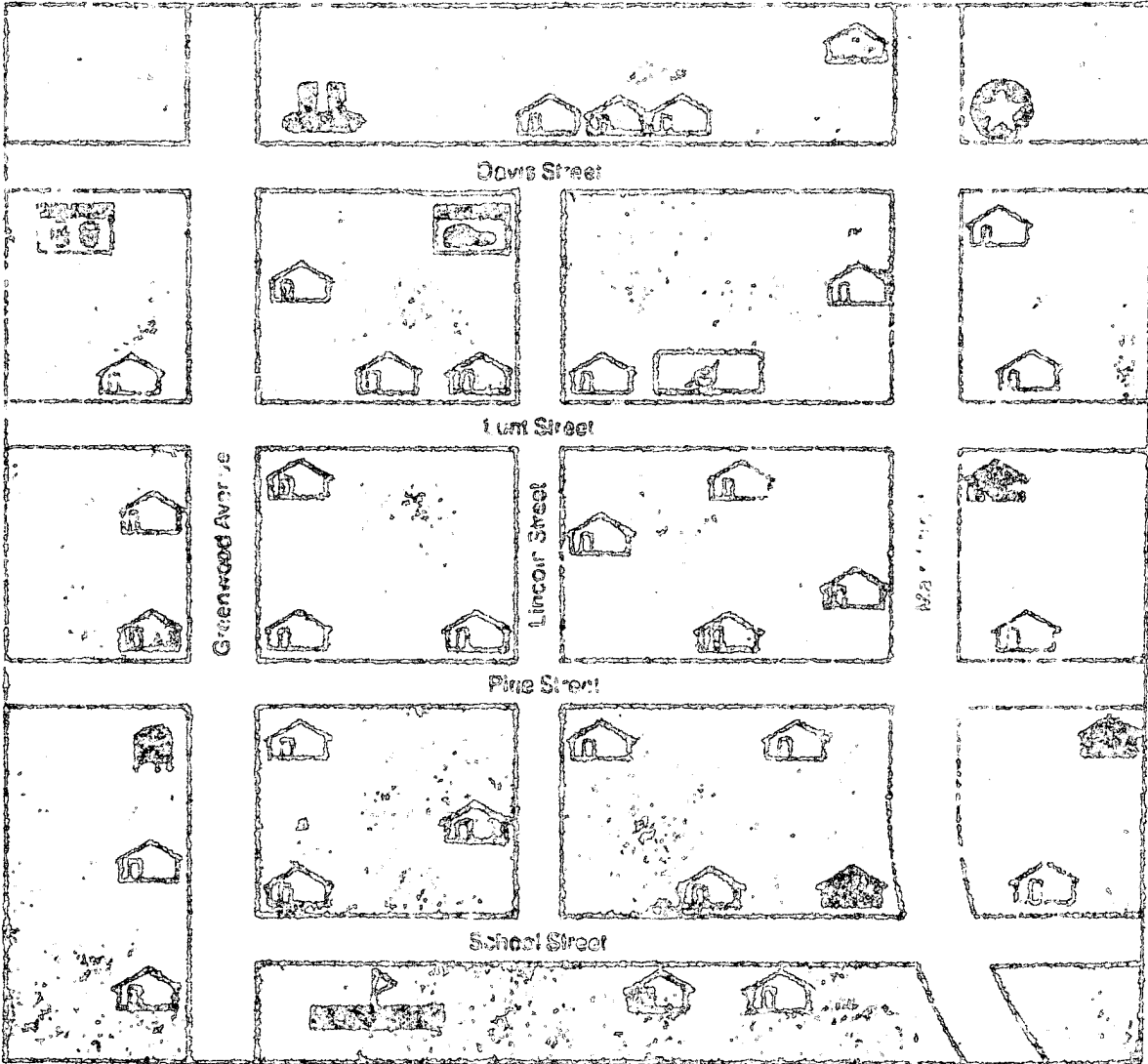
- | | |
|----------|---|
| Airport |  |
| Building |  |
| Tunnel |  |
| Island |  |
| Hills |  |
| Railroad |  |

Maps Use Symbols

Map makers often use special symbols to stand for different things on the earth's surface. Many of these symbols are little drawings that suggest the way things really look. Some of the symbols stand for man-made things. Others stand for natural features. When you read the symbols, you are reading the special language of maps.










Circle each symbol that stands for something *man-made*. Underline each symbol that stands for a *natural feature*. The first two are done for you.

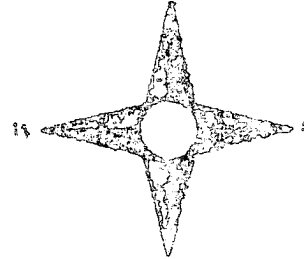
bridge		
lake		
railroad		
road or street		
school		
church		
river, stream, or brook		
tree		
mountain		
hill		
airport		
building		

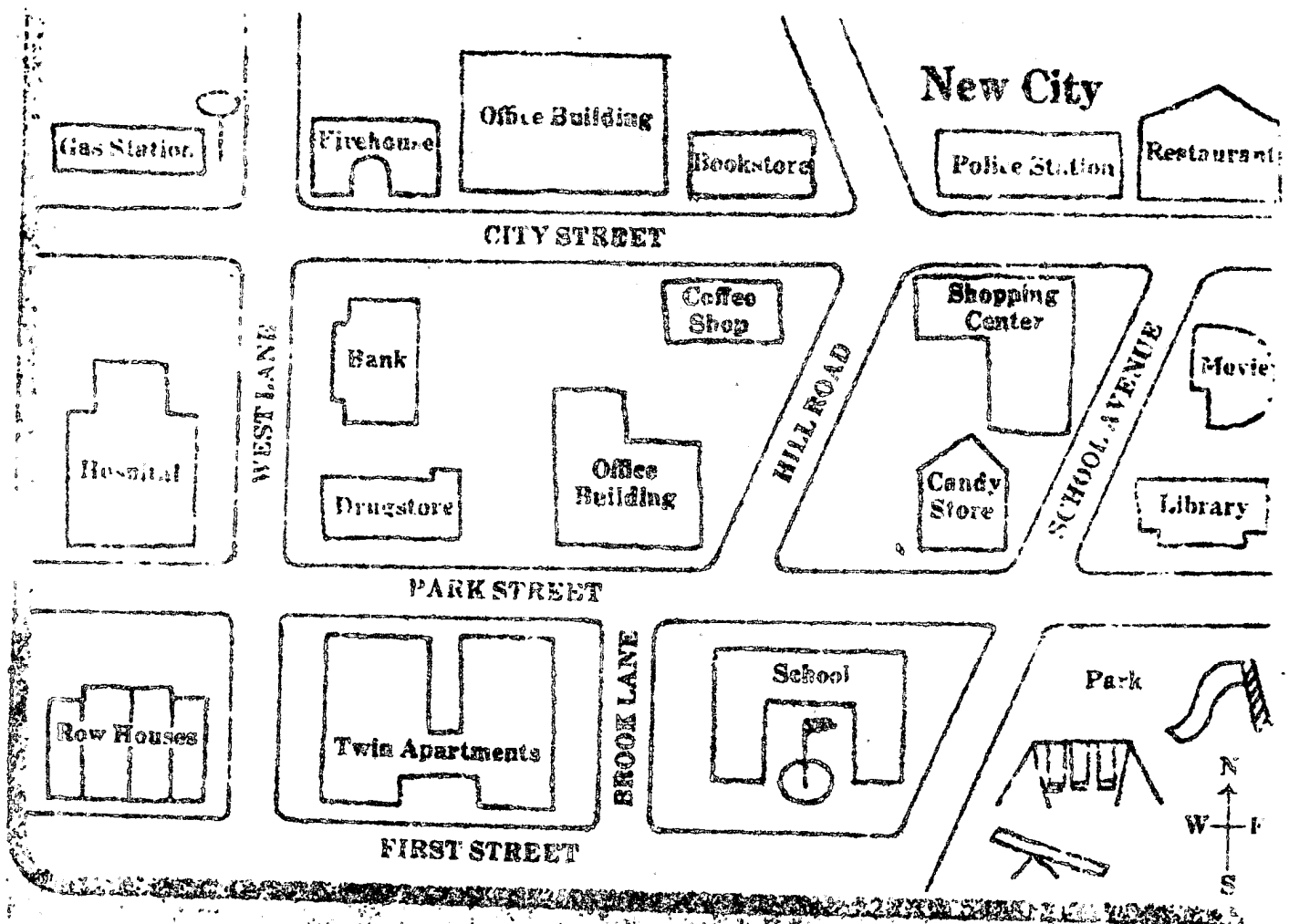


MAP OF A SMALL COMMUNITY

KEY

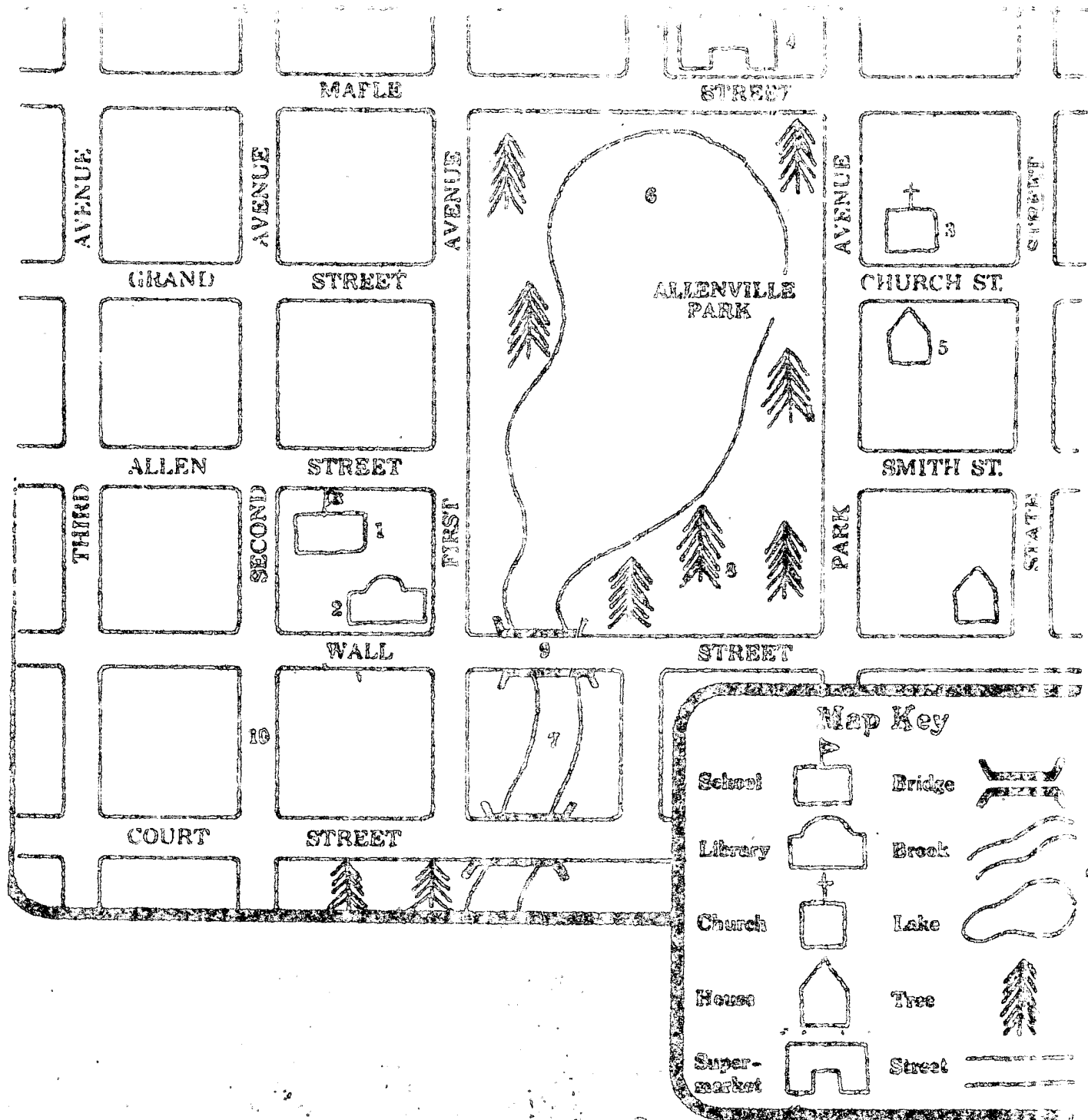
- | | | | |
|---|---------------------|---|---------------|
|  | Mrs. Madine's House |  | Post Office |
|  | Bill's House |  | Gas Station |
|  | Paul's House |  | School |
|  | Hospital |  | Shop Store |
|  | Police Department | | Grocery Store |





Imagine you just moved into Twin Apartments. You want to get to know New City. Take a walk around town. Then underline the correct word or words to complete each sentence.

- From your apartment you take _____ to get to school.
Park Street First Street School Avenue
- The bookstore is on the _____ side of New City.
east west north
- The _____ is the closest building to the gas station.
hospital firehouse bank
- The _____ is farther from the row houses than the bank.
shopping center hospital school
- Park Street is north of _____.
First Street Hill Road West Lane
- The park is _____ of the library.
east north south



This is a map of Fred's neighborhood with symbols instead of labels. Read the map and write the number of each symbol on the line.

_____ a church

_____ trees

_____ a library

_____ a school

_____ house

_____ a street

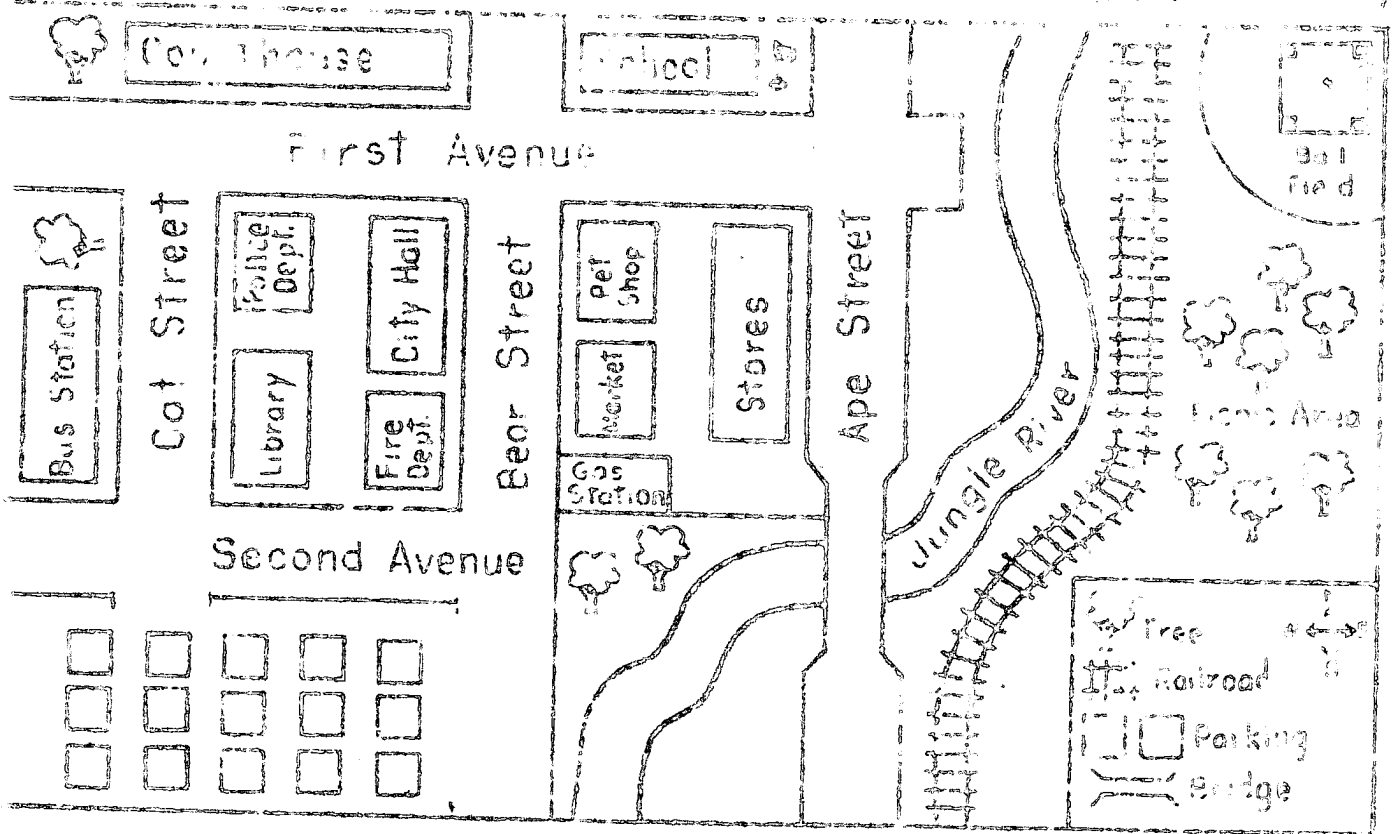
_____ a bridge

_____ a lake

_____ a brook

_____ a supermarket

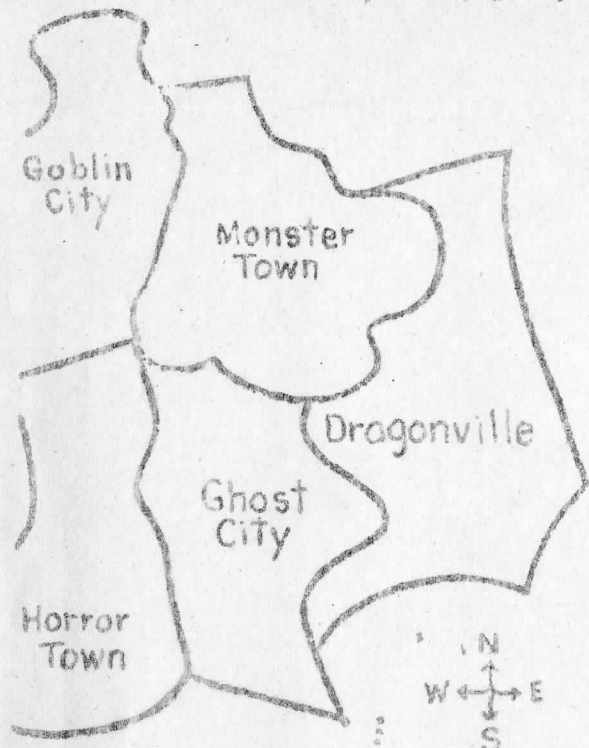
(Use with #8)



(Use with #9)

1. The picnic area is (east, west) of town.
2. The library is on _____ Street.
3. The Jungle River flows under _____ Street.
4. The market is next to the _____ station.
5. The train runs next to the _____ River.
6. The school is (north, south) of town.
7. City Hall is on _____ St. and _____ Ave.
8. The library is two blocks from _____ St.

Fill in the right direction North,
South, East, West.



1. Goblin City is _____
of Horror Town. _____
2. Horror Town is _____
of Ghost City. _____
3. Monster Town is _____
of Goblin City. _____
4. Ghost City is _____
of Monster Town. _____
5. Dragonville is _____
of _____ and _____

7

How far is:

Dragontown from Camelot? _____

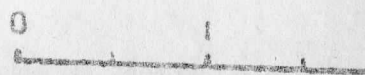
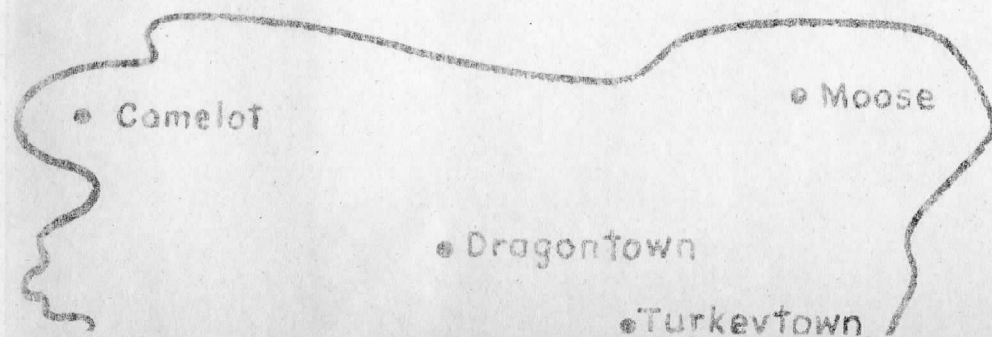
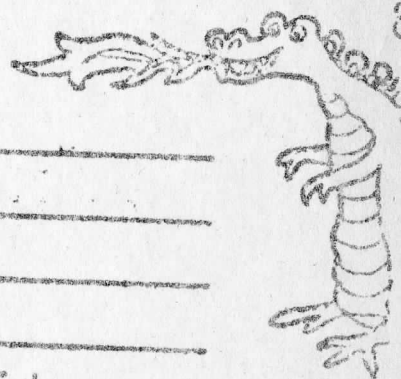
Turkeytown from Moose? _____

Dragontown from Turkeytown? _____

Moose from Dragontown? _____

Which towns are exactly three miles apart?

_____ and _____



SCALE 1 inch = 1 mile