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A placement study of the concept of checks and balances in our federal government at the junior high school level

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A PLACEMENT STUDY OF THE CONCEPT OF CHECKS AND BALANCES IN OUR FEDERAL GOVERNMENT AT THE JUNIOR HIGH SCHOOL LEVEL

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CHAPTER I

INTRODUCTION

Continuous appraisal of topics to be studied and concepts to be developed is a persistent and recurring responsibility that inheres in the teaching-learning process. A relationship must be established among the immature student, the teacher, and the subject matter; otherwise, unrealistic goals will be formulated. Too frequently, selections of topics for consideration in social studies classes have been determined by the internal logic of the subject or discipline rather than the ability of the students to understand the concepts and to relate them to the actual activities of life. Thus the present study was an attempt to arrive at grade placement of a particular social studies topic experimentally.

Purpose of the Study

This study concerned itself with a determination of the optimum grade placement for the topic "checks and balances in our federal government" at the junior high school level. It was anticipated that the application of the pre-test, teaching, and post-test technique of investigation to control and experimental groups would contribute to the formulation of valid generalizations about the topic in question.

Source of the Problem

An intensive search of the list of Doctoral Dissertations Accepted by American Universities[1] and of Dissertation Abstracts[2] revealed that relatively few studies have been completed in the area of grade placement of subject matter in the social studies. Opinion and discussion rather than experimentation have been the bases for grade placement of topics.

Justification of the Problem

The need for more effective teaching in civic education with increased emphasis on the duties and responsibilities of citizens is being urged at all levels of our school system. A knowledge of checks and balances is basic to an understanding of the structure of our federal government. In order that such instruction may be made more effective, educators are constantly emphasizing the need for research which will aid in determining more objectively the grade placement of materials in the social studies. In their review of research Wesley, Carr, and Murra stated that research in

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[1] Gilchrist, D. B., and others, editors, Doctoral Dissertations Accepted by American Universities, vols. 1-22, 1953-1955.

[2] Dissertation Abstracts and Monographs in Microform, vols. 10-33, 1953-1959.

grade placement might well be focused upon the order and presentation of materials in the social studies classroom.[3] They also suggested that further research in curriculum organization might well be directed toward the evaluation of existing forms as well as toward evolving new ones. Materials organized in such a manner as to meet with approval of curriculum makers might be tried out, measured, and contrasted with other forms and such results might be more convincing than mere argument. Morrison also assigned grade placement of materials in the social studies to a high position on the list of needed research in the teaching field.[4]

The lack of agreement as to effective grade placement of content in the social studies has led some educators to suggest that future revisions of the curriculum be conducted by means of an experimental design. That such an approach is being recognized is implied in some present-day writings on the subject of curriculum revision.[5]

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[3] Wesley, S. W.; Carr, E. R.; and Murra, W. F., "The Social Studies," in Encyclopedia of Educational Research, p. 1236.

[4] Morrison, J. C., "The Role of Research in Educational Reconstruction," in American Education in the Postwar Period, p. 240.

[5] Gross, R. E., and Badger, W. V., "Social Studies," in Encyclopedia of Educational Research, pp. 1304-1305.

The Department of Superintendence also felt the need for continuous study of the problem of grade placement. The Fourteenth Yearbook, which was devoted entirely to the social studies curriculum, suggested that more consideration has been given to the selection of objectives, choice of content, and the development of units than to the determination of optimum grade placement of the experiences provided. Most of the earlier efforts in these directions were on the secondary level and the recommendations were developed subjectively.[6]

Additional evidence expressing the need for research studies in the area of grade placement was also presented by Bellack, who stated that "sequence and grade placement deserve high priority on the agenda of curriculum development."[7] However, research as to the manner in which topics are arranged in the social studies is both difficult and complex. The problem of determining what curriculum materials to assign to each grade level has two aspects: (1) provision for the orderly sequence of content elements, (2) the assignment of content materials to a given grade in terms of the level of abilities, interests, and achievement of pupils.

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[6]Department of Superintendence, The Social Studies Curriculum, p. 141.

[7]Bellack, A. A., "Sequence and Grade Placement," Journal of Educational Research 41: 611, April, 1948.

Scope and Limitations

The experiment on the grade placement of checks and balances was conducted in seventh, eighth, and ninth grade social studies classes in three separate communities. The communities selected were Newton, Natick, and Stoughton, all within a radius of twenty miles of Boston, Massachusetts. The school systems of these communities are representative of those in metropolitan area, and each system evidenced interest in the study.

Procedures Employed

The test used as the measuring instrument consisted of 68 items. These items included multiple choice, true-false, matching, and problem situations designed to measure both understanding and application of the concept of checks and balances. Both validity and the reliability of the test were established as a result of a pilot study which is fully described in Chapter III.[8]

Pupils participating in the study were given a pre-test to determine how much knowledge they already possessed about checks and balances in the federal system. The control group in each grade received no instruction whatever on the topic. Following the pre-test the experimental groups in

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[8] See pp. 28-38.

each section were given three teaching lessons of forty minutes each. The teaching was carried out by the regular classroom teachers using the methods and techniques which would be regularly employed by them in presenting the material. At the conclusion both control and experimental groups were given a post-test.

Treatment of the Data

A comparison was made of pre-test and post-test results by grade levels, and also of the scores obtained by control and experimental groups. Tests of significance employing the analysis of variance technique were used to determine whether any differences emerging were statistically significant. Tests of significance by means of the F test were applied to the following null hypotheses:

1. That there are no significant differences in the gain in mean scores between the experimental groups and control groups in grade 7.
2. That there are no significant differences in the gain in mean scores between the experimental groups and control groups in grade 8.
3. That there are no significant differences in the gain in mean scores between the experimental and control groups in grade 9.
4. That there are no significant differences in the gain in mean scores among grades 7, 8, and 9 for the control groups.
5. That there are no significant differences in the gain in mean scores among grades 7, 8, and 9 for the experimental groups.

Definition of Terms

For the purpose of clarification, a list of terms and definitions in relation to their meaning in the present study follows:

> Analysis of variance refers to "a statistical method of segregating from comparable groups of data the variance in the dependent variables traceable to specified classes of groups."[9]
>
> Checks and Balances is "a term signifying the method adopted by the framers of the Constitution of the United States to separate the powers of government so as to prevent the encroachment by one branch upon the domains of the others."[10]
>
> A Control Group is a group "as closely as possible equivalent to an experimental group, and exposed to all the conditions of the investigation except the experimental variable or treatment being studied."[11]
>
> Curriculum denotes "a systematic group of courses or sequence of subjects required for graduation in a major field, for example, the social studies."[12]
>
> The Experimental Group referred to in the study is "the group which is subjected to the experimental factor, the effect of which it is the purpose of the experiment to discover."[13]

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[9] Good, Carter V., editor, Dictionary of Education, p. 144.

[10] The Encyclopedia Americana, vol. 6, p. 372.

[11] English, H. B., and English, A. C., A Comprehensive Dictionary of Psychological and Psychoanalytical Terms, p. 120.

[12] Good, op. cit., p. 113.

[13] English and English, op. cit., p. 191.

The F Test is a "statistic used in estimating the chance probability of equaling or exceeding a given difference between the variance of two samples."[14]

Fusion is the "process whereby curriculum materials from such subjects as history, geography, and civics are combined into a single body of content in such a manner that they lose their subject identity."[15]

Junior high school refers to the "lower part of a divided reorganized secondary school comprising usually grades 7, 8, and 9, less frequently consisting of grades 7 and 8 or grades 8 and 9."[16]

The Null Hypothesis is a "proposition stating that there are no significant differences among the means of the groups that are being compared."[17]

A Pre-test is a test given to determine "the status of the testee or group in regard to some skill, aptitude, or achievement, as a basis for judging the effectiveness of subsequent treatment."[18]

A Post-test is a "test given to the testee or group at the conclusion of an experimental study, the results of which are compared with the results obtained by the testee or group in the pre-test."[19]

Social Studies refers to "an area of the curriculum which is concerned primarily with the nature, manifestations, and development of various types of human relations."[20]

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[14] English and English, op. cit., p. 307.

[15] Tiegs, Ernest W., and Adams, Fay, Teaching of Social Studies, p. 53.

[16] Good, op. cit., p. 231.

[17] Ibid., p. 307.

[18] Ibid., p. 209.

[19] Ibid., p. 307.

[20] Tiegs and Adams, op. cit., p. 49.

CHAPTER II

REVIEW OF RELATED LITERATURE

In reviewing the literature relating to the problem under investigation, the writer has concerned himself with four broad areas: (1) studies and recommendations made by national groups for curricular placement of subject matter in the social studies; (2) studies dealing with an experimental approach to grade placement of content in the social studies; (3) experimental studies in other fields; (4) the relationship between maturation and grade placement of concepts.

Grade Placement Recommendations by National Groups

Among the forces which have influenced the selection of content and materials in the social studies curriculum those exerted by national committees have been most significant. Their recommendations suggesting the general areas of subject matter to be covered and the grade levels at which subjects should be taught have been the basis upon which the social studies curriculum has been organized in our schools.

Committee of Ten. One of the first major curricular studies in the field of social studies was that made by the Committee of Ten of the National Educational Association in 1892. A curriculum for all grade levels was suggested. The

study of biology, mythology, American history, civil government and Roman and Greek history was recommended for the junior high school grades.[1] Therefore, checks and balances would be placed at this level.

Committee of Fifteen. As early as 1895 the Committee of Fifteen of the National Education Association recommended that United States history be taught in grade 7 and that the study of the Constitution of the United States be included in the last half of grade 8.[2] This arrangement of courses would place the teaching of checks and balances at the eighth grade level. The report contained no evidence of selecting this order of topics by any objective or experimental approach.

Committee of Seven. Four years later the Committee of Seven under the direction of the American Historical Association issued a report that had significant effect on the teaching of history in the high schools. This report suggested a program of social studies for the elementary schools through grade 8. In the upper limits of the elementary school the study of medieval and modern history was placed in grade 6; English history in grade 7; American

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[1] Elliot, C. W., chairman, Report of the Committee of Ten on Secondary School Studies, p. 163.

[2] Harris, W. T., chairman, Report of the Committee of Fifteen, p. 94.

history and civil government in grade 8.[3] Under this arrangement of subject matter the grade placement of checks and balances would also come in the eighth grade.

Committee of Eight. The American Historical Association appointed another committee which in 1908 suggested another program of social studies for the elementary schools. For the upper grade levels this program stressed colonial history including the Revolution in grade 7; American history, 1787-1876; and some recent history in grade 8. Once again the study of checks anc balances was placed in the eighth grade.[4]

Committee on History and Education for Citizenship. A report on the teaching of the social studies which proposed a somewhat different organization of content was issued by the American Historical Association in 1921.[5] The arrangement of subject matter suggested by this group placed United States history, 1783-1877, in grade 5; United States history since 1877 in grade 6; "the World before 1607," including the

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[3]McLaughlin, A. W., chairman, The Study of History in Schools, p. 170.

[4]James, A. J., chairman, The Study of History in the Elementary Schools, p. 122.

[5]Schafer, Joseph, "Report of Committee on History and Education for Citizenship," Historical Outlook 12:90-94, March, 1921.

history of Spanish America, in grade 7; "the World since 1607," with emphasis on the economic history of the United States, in grade 8. From an analysis of the above it can be readily seen that the grade placement of checks and balances might be taught as low as the fifth grade of the elementary school as well as in grade 8.

Commission on the Social Studies Curriculum. In 1934 the Commission on the Social Studies Curriculum of the Department of Superintendence conducted a national survey in an effort to discover some of the current practices in the social studies at the elementary and secondary school levels. Grade levels at which various topics should be introduced was one important aspect of the study. The results were reported in detail in the Fourteenth Yearbook.[6]

Joint Committees. In 1944 a combined report on the teaching and study of American history was submitted by The American Historical Association, The Mississippi Valley Historical Association, and The National Council for the Social Studies. One important part of this report was the section that related to a survey of the history program in the schools. The Committee recommended the minimum content of American history for various grade levels.[7] A further recommendation

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[6]Department of Superintendence, The Social Studies Curriculum, pp. 63-69.

[7]Wesley, E. B., director, American History in Schools and Colleges, p. viii.

was made that between grade 7 and the end of grade 9 all pupils should study various phases of our national life. Six large areas were suggested, the first being the American Revolution, including the study of the Articles of Confederation and the Constitution. In the study of the Constitution the concepts of checks and balances would be included.[8] The grade placement of checks and balances was not spelled out by this committee, but it appeared to have been left to the judgment of the local school systems to decide at what grade level the various phases of our national life should be introduced.

Experimental Studies in Grade Placement

Meltzer's Study. One of the pioneer studies of this sort, which involved the testing of materials under normal classroom conditions, was conducted by Meltzer in 1925.[9] This study attempted to trace in the pupils' minds some concepts the understanding of which make selected situations of contemporary life more intelligible to us. A list consisting of 31 items was chosen from magazines over a period of five years. The concepts involved nearly all aspects of society:

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[8] Ibid., pp. 76-77.

[9] Meltzer, Hyman, Children's Social Concepts: A Study of Their Nature and Development, 91 pp.

politics, economics, world affairs, labor, and industry.[10]

The technique used was the personal interview. Each child was tested individually. The child talked and the examiner did all the writing. No effort was made to determine marks but rather to identify ideas children had of the list of concepts, and to undertake to penetrate into the nature of these ideas.

The total number of children tested by Meltzer was 333. They were composed of 221 elementary and 112 high school children. The results showed a steady development in the children's concepts from grade to grade. The highest correlation was with the educational age of the pupils; grade, mental age, chronological age, and occupational status of parents followed in that order.[11]

Meltzer found that the curriculum had a direct and measurable influence on the children's ability to grasp concepts. The experiment also disclosed that the line of demarcation was more noticeable, not between general and particular concepts, but between concepts known and not known.[12]

Lacey's Study. Another study involving children's concepts was carried out by Lacey in the first three grades

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[10] Ibid., p. 91.

[11] Ibid., pp. 87-89.

[12] Ibid., pp. 88-89.

of the elementary school.[13] The study was designed to take stock of information children have about the social world in which they live; to aid in curriculum revision; to study particular meanings which make up concepts; and to understand a little better the trends of children's minds as concepts are developed.

Lacey's criteria for selecting concepts were taken from concepts which have appeared in the most recent representative curricula for the social studies; from the physical, social, and industrial world; and from the social heritage of our race, such as heroes, holidays, and great deeds of the past.

She constructed a pictorial test in which each concept was represented by a picture and several questions were formulated about each picture to determine associated meanings. The pupils tested numbered 450 in the first three grades, with approximately 150 in each grade. Analysis of the data showed very little difference among the three grades as to central tendency and variability. The average child in grade 2 was only 1.12 points ahead of the average child in grade 1, and the differences between grades were less important than the differences within a grade. Lacey concluded that concepts were not well taught or were not considered of prime importance.[14]

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[13] Lacey, J. M., Social Studies in the First Three Grades, 91 pp.

[14] Ibid., pp. 87-90.

Haupt's Study. The problem of discovering at what grade level children have the ability to generalize was the subject of an investigation by Haupt. The results of this study revealed that children at all grade levels have some ability to generalize, but that this ability is limited by the complexity of the concept studied.[15]

The implications of such conclusions in regards to concepts and generalizations for the present writer are quite obvious. The understandings involved in checks and balances require that pupils possess the ability to generalize and to form concepts. Only by combining facts to form generalizations and concepts can teachers be reasonably certain that pupils really do understand the nature of checks and balances in our Constitution. Any objective data that may result from classroom experimentation concerning the ability of pupils to make generalizations and interpretations, or any information as to the limitations of such abilities at any grade level, would be of utmost importance to anyone engaged in curriculum planning.

Rummell's Study. One important study in recent years which attempted to locate social studies materials in terms of grade placement and which also took into consideration the many factors which comprise the learning situation was done

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[15] Haupt, George, An Experimental Application of the Philosophy of Science Teaching in an Elementary School, p. 75.

by Rummell at Boston University. The purpose of this study was to discover whether or not a certain motion picture film was equally suitable for any grade or intelligence level, or whether there were certain grade or intelligence levels where that film could be expected to produce optimum learning because of its suitability to the background and educational training of the pupils.[16] Using a single school system with a total of 121 pupils in each grade from grade 3 through grade 12 and a teaching staff of approximately 150, Rummell's experiment began in November and continued until March. The procedure used was the pre-test, demonstration, and post-test technique. The motion pictures were selected from American history films commonly used in schools. The results of Rummell's study showed that there are certain grade levels where sound motion pictures produced optimum factual learning. His results were based upon the mean gains of scores made on the tests by different groups.

Studies by Early and Wolffer. Two companionate studies were completed in 1952 at Boston University which made significant contributions to the subject of grade placement of social studies materials in terms of vocabulary. One of the studies, by Early, involved the construction and evaluation of

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[16] Rummell, P. Z., Theories of Grade Placement of Motion Picture Film, pp. 38-40.

a social studies vocabulary test for intermediate grades.[17] A test of 114 items was constructed which was designed to measure children's understandings of social studies word meanings through the technique of associating words with category titles. The test was administered to a random sampling of children who comprised the total population of the fourth, fifth, and sixth grades in nine cities and towns.

Some of the more important conclusions reached by Early as indicated by the statistical analysis of the test data were as follows:

> 1. Of 670 word meanings tested only two such words were mastered by 90% or more of the population sampled at the fourth grade level, 13 words at the fifth grade level, and 48 at the sixth grade level.
>
> 2. Test words mastered by 80-90% of the population sampled numbered 10 at the fourth grade level, 59 at the fifth grade level, and 97 at the sixth grade level.
>
> 3. Words mastered by 75-79% of the population sampled numbered 17 at the fourth grade level, 32 at the fifth grade level, and 55 at the sixth grade level.
>
> 4. The understanding of social studies vocabulary increases with each school grade level in the intermediate school grades.[18]

Early concluded that vocabulary tests can be used to determine the status of children's understanding of social

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[17] Early, W. L. Jr., The Construction and Evaluation of Social Studies Vocabulary Association Test for Intermediate Grades, 179 pp.

[18] Ibid., pp. 54-56.

studies words and concepts. He further found that the category-association technique is a highly valid and reliable method of measuring knowledge of social studies vocabulary.

A parallel study involving the construction and evaluation of a social studies context and vocabulary test for intermediate grades was carried out by Wolffer.[19] The purpose of this study was to ascertain the vocabulary needed by fourth, fifth, or sixth grade children in order to get meaning from printed materials and spoken ideas basic to understanding in the social studies. Five tests forms were administered, one containing 82 items, and four of 83 items. The tests were given to 2,974 fourth, fifth, and sixth grade children in the same towns and cities in which Early conducted his study.

The results of Wolffer's experiment also indicated that diagnostic tests can be used to determine the status for instructional purposes of the social studies vocabulary of children. The study also supported the conclusion that the content method of teaching is a valid and reliable technique of diagnosing the social studies vocabulary needs of intermediate grade children. From the statistical analysis of the data Wolffer also concluded that words are not so well understood by intermediate grade children as is necessary for

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[19]Wolffer, W. A., The Construction and Evaluation of a Social Studies Context Vocabulary Test, 204 pp.

comprehending the social studies concepts.[20]

Brown's Study. In 1957 a study was completed by Brown on the same topic as the present study.[21] His investigation of checks and balances was prepared for the purpose of lending support to the present study.[22] This experiment took place in a small town in eastern Massachusetts. The study was conducted in the seventh, eighth, and ninth grade social studies classes. A total of 318 pupils participated who were divided as follows: four seventh grade classes totaling 81 pupils, four eighth grade classes totaling 98 pupils, and seven ninth grade classes totaling 139 pupils.

At each grade level the pupils were divided into two groups, an experimental group and a control group. The design used was that of pre-test, teaching, and post-test. The lecture approach was the teaching technique used by all participating teachers.[23] The pupils of both experimental and control groups were given a pre-test on the topic of checks and balances, and their performance on the pre-test evaluated and compared. Two weeks following the pre-test the experimental groups were given one forty-minute lecture

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[20] Ibid., pp. 57-59.

[21] Brown, Raymond N., An Analysis of the Concepts of Checks and Balances in our National Government in Terms of Grade Placement, 63 pp.

[22] Ibid., p. 1.

[23] Ibid., p. 10.

on the Constitution. No instruction or teaching lessons whatever were given to the pupils comprising the control groups. Five days later both groups were given a post-test and the results were evaluated and compared.

The test consisted of 50 questions on the subject of checks and balances and was an objective type which included four-answer multiple choice, true-false, matching, and completion items.

Analysis of the test results indicated a weakness in knowledge and understanding of the functions of the executive department as well as almost complete lack of knowledge of the British government.[24]

The test results seemed to indicate that the pupils of both experimental and control groups had a fair knowledge of the political philosophy and actual functioning of the system of checks and balances. The results of Brown's study revealed that the greatest gains were made by the experimental groups in grade 7, but the highest and most consistent level of performance was made by the ninth grade experimental groups.[25] Brown attributes the showing made by the seventh grade experimental groups as due to the fact that they had no previous study on the Constitution as did the other two

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[24] Ibid., p. 19.

[25] Ibid., pp. 27-28.

grades. It is important to note that Brown did not apply any statistical tests of significance to his findings.

Experimental Studies in Other Fields

The problem of proper grade placement of content and materials has not been confined entirely to the social studies, but has been an important subject for study and discussion in other areas of the educational program. It is the opinion of the writer that a few of the pioneer studies in grade placement in related fields should be mentioned.

Grade Placement in Arithmetic. One of the most comprehensive studies in the field of grade placement in a related area was in arithmetic. This study was conducted by the Committee of Seven under the direction of Carleton Washburne.[26] This study was conducted in 148 cities. Several thousand children participated. The Committee of Seven undertook to determine the mental age level at which various processes in arithmetic might be taught profitably to children. The significant conclusion reached by Washburne and his Committee of Seven was that there is a point in a child's mental growth before which it is not effective to teach a given process in arithmetic, and after which that particular process may be taught effectively.

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[26] Washburne, G. W., "Mental Age and the Arithmetic Curriculum," Journal of Educational Research 23: 210-31, March, 1932.

Grade Placement in Physical Science. Another significant contribution to the problem of grade placement of materials and content was made in the area of physical science by Oxendine at Boston University. This study was carried on in 15 elementary schools in the New England area, involving 700 pupils from grades 4, 5, and 6.[27] The three communities selected were urban, urban fringe, and rural. The pupils were divided into control and experimental groups. The experimental groups were given a pre-test followed by a demonstration on the principle, "Sound is produced by vibrating material." This was followed immediately by a post-test. The control groups received the pre-test and post-test but no teaching lesson. Oxendine's investigation showed that the principle should not be introduced at the fourth grade level, but for maximum learning the sixth grade level was best.

The need for more scientific research in grade placement to supplement what is already available was strongly urged by Herrick.[28] Writing on the subject of "Research in Curriculum," Herrick stated that the teachers and supervisors can do a great deal by classroom testing of instructional

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[27] Oxendine, H. G., The Grade Placement of the Physical Science Principle, Sound is Produced by Vibrating Material in Relation to Mental Age, 129 pp.

[28] Herrick, Virgil E., "Research in Curriculum," Educational Leadership 33: 399, April, 1956.

procedures and materials against important educational goals and behavioral changes in children.

Relationship Between Maturation and Grade Placement

It is essential that any study concerned with grade placement of content take into consideration the maturity level of the pupils who are being studied. The importance of maturation is clearly pointed out by Kingsley, who defined maturation as "the normal physical growth of the physiological functions."[29] If these physical structures are sufficiently developed to enable a pupil to carry on an activity necessary for a special type of learning, the pupil will achieve success in that direction.

Hildreth, another investigator in this field, stated the need for giving serious consideration to the problem of maturation in the learning process:

> If a child is presented with a problem which is beyond his maturity level, he will reduce or simplify the problem to his own realm of understanding, which may lead to misconceptions and can make learning more difficult when proper maturation level is reached.[30]

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[29] Kingsley, H. L., The Nature and Condition of Learning, p. 149.

[30] Hildreth, Gertrude, "The Difficulty Reduction Tendency in Perception and Problem Solving," The Journal of Educational Psychology 32: 305-313, April, 1941.

Washburne also suggested that if a child is confronted with a problem which he must solve, it will give him a feeling of failure if the particular problem is beyond his maturity level. This sense of failure is certain to undermine his feeling of security. Thus the problem of maturation in the child as Washburne saw it is one in which "we must guide him into those learning situations that he can attack effectively and sufficiently successfully to yield satisfaction, encouragement, and growth."[31]

Grade placement of content and materials is not wholly a matter of maturation, however, as many other phases of the child's behavior must be considered. A very important aspect is that of learning readiness which includes, of course, maturation, but also such things as interest, attitudes, social pressures, and training. It is also difficult to separate these factors for study.

In the present study of the grade placement of checks and balances the problem of maturation will be given consideration in reporting the results and conclusions as both chronological ages and intelligence quotients will be part of any understandings which the study may report.

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[31] Washburne, C. W., "Introduction," Child Development and the Curriculum, p. 3.

Summary

This chapter opened with a consideration of the studies which have been made in the grade placement of the several aspects of the junior high school social studies. Such studies have been in progress for well over a half century, and it is pedagogically disheartening to find that the results of the latest studies reaffirm the findings of the earliest. The grade placement of the several aspects of the social studies generally has been determined by the judgment of the people who write the textbooks and the people who run the schools. Very seldom has their judgment been subjected to the objective appraisal of scientific testing.

The need for experimentation of a scientific design in the vital matter of grade placement is gradually coming to be recognized. The National Council for the Social Studies, the Department of Superintendence, and such individual investigators as Wesley, Carr, and Murra have recognized it and called it to the attention of American educators. Pioneer studies do exist: Meltzer, Lacey, Haupt, Rummell, Early and Wolffer, and Brown have presented findings that are both interesting and valuable as to what lies beneath an, as yet, inadequately probed surface. Experimental studies of the same sort in other areas confirm the prospective gains to be derived from such investigations. That maturation is an important factor in the determination of proper grade placement is a self-evident fact; as investigation proceeds, its importance may well increase in significance.

CHAPTER III

PROCEDURE

The procedure followed in the investigation consisted of (1) construction and validation of a measuring instrument, (2) selection of a sample population of junior high school pupils as the subjects of the experiment, and (3) determination of the procedures to be carried out in the course of the study.

Preliminary Planning

The Test Technique. As the purpose of this study was to determine whether or not the concept of checks and balances in our Constitution is more suitable for learning at one junior high school grade level than at any other, an instrument was constructed which consisted of items that tested the understanding and application of the concept of checks and balances in specific problem situations, as well as factual knowledge. In order to be certain that a concept in social studies is really mastered by pupils at any grade level, one should include in such a test items that relate specifically to the understanding and application of the particular concept or concepts. The final form of the measuring instrument, therefore, included several test items which required some ability on the part of the pupils to make generalizations and to draw conclusions.

Structure of the Test. The test consisted of four parts: (1) a series of multiple choice items, (2) matching items, (3) true-false items, and (4) problem situations. The test contained a total of 68 items. The construction of the responses was in accordance with suggestions made by Ross and Stanley[1] and by Ebel and Lindquist.[2] The items were grammatically correct, of approximately equal length, and related specifically to the topic of checks and balances.[3]

Validation Procedure. As partial validation of the instrument, the various items making up the test were submitted for evaluation to a group of 80 experienced teachers from the junior high school through the college level. The median experience of the group was ten years in the teaching profession. Members who comprised the group were asked to consider each item in terms of its suitability to the topic of checks and balances and freedom from ambiguity. The test in its final form contained only those items on which there was unanimity of opinion.

The difficulty of the test was established on May 15, 1957, by a preliminary trial run with a sub-sample group of

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[1]Ross, C. C., and Stanley, J. C., Measurement in Today's Schools, p. 150.

[2]Ebel, R. L., and Lindquist, E. F., editors, Educational Measurement, p. 232.

[3]See Appendix A, pp. 88-103.

seventh, eighth, and ninth grade pupils of the Norwood junior high school. One section at each grade level took the test. Date indicating that the more advanced the grade, the higher the per cent marking the correct responses to each item can be found in Table 1. With the exception of items 22 and 64, a study of Table 1 reveals that each item showed an increase in the per cent marking the correct response with each advancing grade group. Such an increase is generally accepted as an indication of item validity.

TABLE 1. PERCENTAGE OF PUPILS CORRECTLY RESPONDING TO EACH ITEM IN GRADES 7, 8, AND 9 OF THE NORWOOD JUNIOR HIGH SCHOOL, NORWOOD, MASSACHUSETTS.

Item	Grade 7		Grade 8		Grade 9	
No.	Correct Response	Per cent	Correct Response	Per cent	Correct Response	Per cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	24	79	27	84	30	100
2	16	50	21	66	27	90
3	15	47	21	66	25	83
4	13	40	19	59	22	773
5	20	62	24	75	28	93
6	24	78	26	81	30	100
7	21	64	28	88	30	100
8	22	68	26	81	28	93
9	22	68	25	78	30	100
10	23	71	27	84	30	100
11	20	62	26	81	28	93
12	19	59	26	81	30	100
13	22	68	27	84	30	100
14	23	71	27	84	29	97
15	15	47	20	62	25	83

TABLE 1 (Continued)

Item	Grade 7		Grade 8		Grade 9	
No.	Correct Response	Per cent	Correct Response	Per cent	Correct Response	Per cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)
16	12	38	18	57	24	80
17	10	31	19	59	22	73
18	14	44	21	66	24	80
19	18	57	22	68	26	86
20	5	16	22	68	26	86
21	7	22	9	28	12	40
22	12	38	9	28	12	40
23	10	31	16	50	27	80
24	9	28	17	53	26	86
25	17	53	14	44	26	86
26	20	62	24	75	28	97
27	22	68	26	81	30	100
28	21	64	23	72	27	90
29	22	68	23	72	28	93
30	3	09	9	28	10	33
31	6	19	13	40	19	63
32	9	28	14	44	20	66
33	5	16	9	28	14	47
34	7	22	12	38	19	63
35	10	31	17	53	23	76
36	5	16	7	22	23	76
37	11	34	18	57	24	80
38	6	19	9	28	13	43
39	8	25	11	34	17	56
40	10	31	22	68	25	83
41	16	50	13	44	19	63
42	14	44	19	59	25	83
43	8	25	14	44	20	66
44	11	34	14	44	20	66
45	12	38	16	50	20	66

TABLE 1 (Continued)

Item	Grade 7		Grade 8		Grade 9	
No.	Correct Response	Per cent	Correct Response	Per cent	Correct Response	Per cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)
46	13	40	18	57	23	76
47	3	09	5	16	11	36
48	15	47	17	53	24	80
49	11	34	16	50	26	86
50	14	44	17	53	21	70
51	13	40	16	50	22	73
52	12	38	17	53	23	76
53	13	40	19	59	26	86
54	4	12	8	25	11	36
55	12	38	18	57	23	76
56	11	34	15	47	21	70
57	17	53	24	75	28	93
58	9	28	12	38	16	53
59	7	22	11	34	13	43
60	10	31	13	40	18	60
61	8	25	13	40	17	56
62	5	16	13	40	17	56
63	7	22	8	25	9	30
64	12	38	9	28	14	47
65	4	12	6	19	9	30
66	12	38	17	53	23	76
67	8	25	10	31	15	50
68	6	19	11	34	14	47

Item Analysis to Determine the Validity of the Test. In order to further validate the test, an item analysis was made to determine the difficulty and discriminating power of each item. The papers of the upper and lower 27 per cent of

the testees were selected for analysis, according to an item analysis procedure outlined by Ross and Stanley.[4] In Table 2 the discriminating power and difficulty values for each of the 68 items are presented.

Ross and Stanley suggested that the index at or above which an item can be considered sufficiently discriminating for a sample of 112 pupils is eight.[5] It can be seen that a few items are below this figure. Only one item shows a minus index. On this item a larger number of pupils in the highest 27 per cent marked the wrong response than in the lowest 27 per cent. Thus, it was thought necessary to discard only those items which were below an index of five and to revise the few other items which had an index below eight. Therefore, items 11, 26, and 42 were deleted and substitutions made for them.

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[4] Ross and Stanley, op. cit., pp. 437-440.

[5] Ibid., p. 448, Table 46.

TABLE 2. TEST ITEMS IN RANK ORDER ACCORDING TO DISCRIMINATING POWER OF ITEMS (1 = POOREST DISCRIMINATION)

Item Number	Rank Order of Item According to Discriminating Power	W_L*	W_H	$W_L - W_H$	$W_L + W_H$	Estimated Percentage of Testees Who Did Not "Know" the Correct Answer to the Item** (Difficulty)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
42	1	20	24	-4	44	66
26	2	21	21	0	42	63
11	3	3	0	3	3	5
30	4	7	4	3	11	16
27	5	4	0	4	4	6
8	6	24	20	4	44	66
5	7	4	0	4	4	6
62	8	8	3	5	11	17
21	9	5	0	5	15	8
62	10	5	0	5	5	8
6	11	0	5	5	5	8
45	12	17	10	7	17	41
61	13	25	18	7	43	64
29	14	26	9	7	35	43
20	15	11	3	8	15	22
32	16	8	0	8	8	12
9	17	13	5	8	18	23
66	18	8	0	8	8	13
55	19	8	0	8	8	13
44	20	8	0	8	8	13
51	21	9	0	9	9	14
22	22	24	16	8	40	60
25	23	16	8	8	24	36
4	24	19	11	8	30	21
1	25	14	6	8	20	30
12	26	16	7	9	23	35
39	27	28	19	9	47	70
37	28	25	16	9	41	60
17	29	18	9	9	27	41
41	30	27	18	9	45	68

TABLE 2 (Continued)

Item Number	Rank Order of Item According to Discriminating Power	W_L	W_H	$W_L - W_H$	$W_L + W_H$	Estimated Percentage of Testees Who Did Not "Know" the Correct Answer to the Item (Difficulty)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
36	31	12	3	9	15	23
60	32	24	15	9	39	59
19	33	17	8	9	45	38
65	34	25	15	10	40	36
13	35	15	5	10	20	21
40	36	14	4	10	18	27
53	37	21	11	10	32	47
48	38	17	6	11	23	35
18	39	16	5	11	21	32
57	40	21	10	11	31	47
16	41	23	12	11	35	53
15	42	22	11	11	33	50
52	43	27	15	12	32	68
35	44	17	4	13	21	33
49	45	17	4	13	21	32
29	46	17	4	13	21	32
31	47	18	4	14	22	33
68	48	26	12	14	38	37
47	49	20	6	14	26	39
54	50	21	7	14	28	42
23	51	15	0	15	15	23
50	52	17	2	15	19	29
64	53	24	9	15	33	50
33	54	19	3	16	22	33
2	55	23	7	16	30	45
67	56	25	9	16	34	51
59	57	19	3	16	22	33
34	58	20	3	17	23	35
56	59	20	3	17	23	35
63	60	18	0	18	18	27

TABLE 2 (Continued)

Item Number	Rank Order of Item According to Discriminating Power	W_L	W_H	$W_L - W_H$	$W_L + W_H$	Estimated Percentage of Testees Who Did Not "Know" the Correct Answer to the Item (Difficulty)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
58	61	22	5	19	27	41
7	62	25	5	20	30	45
38	63	20	0	20	20	30
43	64	24	4	20	28	42
14	65	23	4	21	27	41
46	66	21	0	21	21	32
24	67	25	3	22	28	42
10	68	22	0	22	22	33

*W_L = number of pupils in the lowest 27 per cent who answered the item incorrectly or omitted it.

W_H = number of pupils in the highest 27 per cent who answered the item incorrectly or omitted it.

$W_L - W_H$ = the difference between lowest 27 per cent and highest 27pper cent for each item.

$W_L + W_H$ = the sum of the lowest 27 per cent and the highest 27 per cent answering each item incorrectly.

**The formula employed was $\frac{68 \times 0}{2n(0-1)}$.

Reliability of the Test. For the purpose of establishing the reliability of the measuring instrument, the test was administered to 112 pupils at the Boston Latin School. The pupils were all enrolled in grade 9. The first administration of the test took place on December 12, 1957, and the second or re-test was given on December 22, ten days later. No information was given to the pupils or to the teachers that the test would be repeated. The test was scored by counting each item as right or wrong and the total score that a pupil received equalled the number of items marked correctly.

The results of the tests are analyzed in Table 3. A relatively stable performance by most ninth grade pupils of the Boston Latin School on both tests is apparent from the scores given in Table 3. Such consistency is generally accepted as one measure of reliability of a test.[6]

TABLE 3. ANALYSIS OF THE TEST-RE-TEST SCORES OF 112 NINTH GRADE PUPILS AT THE BOSTON LATIN SCHOOL.

No. of pupils tested	Differences between pupils' scores on test-re-test							
	Same score	1-pt. diff.	2-pt. diff.	3-pt. diff.	4-pt. diff.	5-pt. diff.	6-pt. diff.	7-pt. diff.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
112	28	22	19	18	9	2	4	10

[6] Ibid., p. 123.

As another measure of reliability of the measuring instrument, the ranges, means, and standard deviations of the test and re-test were computed. The results obtained for these measures are presented in Table 4.

TABLE 4. RANGES, MEANS, AND STANDARD DEVIATIONS OF 112 PUPILS ON TEST-RE-TEST.

Test	Range	Mean	Standard Deviation
	37	39.7	7.7
Re-test	38	41.6	7.1

The distributions of scores for the test-re-test as shown in Table 4 appear to be quite similar, based upon measures of central tendency and variability. A detailed comparison of scores obtained by each of the 112 pupils in the test-re-test is found in Appendix B.

From the scores obtained on the test-re-test it was possible to compute the coefficient of correlation from the two sets of scores. The Pearson Product-Moment formula was used to evaluate the reliability of the measuring instrument. The formula is:

$$r = \frac{\frac{xy}{N} - c_x c_y}{\sigma x \quad \sigma y} \quad (7)$$

[7]Ross, C. C., Measurement in Today's School, p. 239.

A scattergram was constructed from the scores of the two tests, and the Durost-Walker Correlation Chart[8] was used to compute the correlation. The correlation between the two tests was .89, indicating a high degree of reliability for the test.

Another measure of reliability of the test was determined by computing the coefficient of correlation between the split halves of the test. The Pearson Product-Moment formula was again employed. The test was split into halves on the basis of odd-even items, a scattergram was constructed, and the reliability of the half-test was computed. The Durost-Walker Correlation Chart was again used. From this the coefficient of correlation was corrected by the Spearman-Brown prophecy formula for the whole test. The formula is:

$$r_w = \frac{2r_{\frac{1}{2}}}{1 + r_{\frac{1}{2}}} \quad (9)$$

A correlation of .84 again indicated a reasonable degree of reliability for the test.

Description of the Sample

For the purpose of establishing proper grade placement of checks and balances, a sample population of junior

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[8]Durost, W. N., and Walker, H. M., Durost-Walker Correlation Chart

[9]Ross and Stanley, op. cit., p. 123.

high school pupils was needed. The criterion groups used in this study were pupils in the Warren Junior High School, Newton; Coolidge Junior High School, Natick; and the junior-senior high school, Stoughton, Massachusetts. The grades involved were 7, 8, and 9. Two of the communities, Natick and Newton, have a junior high school system as part of the 6-3-3 plan; but at present, because of overcrowding, Natick is operating under the 6-2-4 plan, with the ninth grade classes being held in the senior high school building. When the new junior high school is completed, Natick will return to the 6-3-3-plan. Stoughton follows the 6-6 pattern of organization at present.

The total number of pupils who made up the sample was 786. The number of pupils from each community was approximately the same. A total of 27 classes composed of three sections from each grade in each community participated.

Pertinent information relative to the sample population is presented in Table 5. It is readily apparent from the last column in Table 5, that the sample in all three communities is nearly equivalent in size.

TABLE 5. DERIVATION OF THE SAMPLE*

Community	Total Pop.	Total School Pop.	Enrollment Grades 7, 8, 9	Sample Pop.	Per cent of Sample
(1)	(2)	(3)	(4)	(5)	(6)
Newton	86,535	15,292	3,422	253	.322
Natick	26,213	5,948	1,145	255	.324
Stoughton	13,754	3,040	647	278	.354
Totals	126,502	24,280	5,214	786	100%

*Sources: Annual Report, Town of Stoughton, 1958, pp. 1,72,98.

Membership by Grades, Bulletin, Newton Public Schools, 1958.

Enrollment by Grades, Bulletin, Natick Public Schools, 1958.

Procedures Employed

The plan followed throughout this investigation was based on an experimental design, using control and experimental groups. At each grade level in the study three sections were involved. One section in each grade was known as the control group, the other two sections the experimental groups. A total of 27 classes participated, with nine sections making up the control groups and 18 sections comprising the experimental groups. The experimental groups were taught

the concept of checks and balances by their regular teachers. The teachers were asked to use whatever methods or techniques they would regularly employ in teaching the topic of checks and balances. The teacher-learning activities consisted of three class periods of approximately 45 minutes each. The control groups received no instruction whatever on the topic of checks and balances. All groups were given a pre-test to ascertain how much knowledge of this concept the pupils already possessed. Following the teaching both control and experimental groups were given a post-test. The number of teachers cooperating in the study was 21.

The distribution of the pupils in the three schools in the study is presented in Table 6 on the following page. An examination of Table 6 reveals that a few more pupils participated in the study from Stoughton than from Newton and Natick, and that in all classes in Stoughton except grade 7 the enrollment was larger. However, in the opinion of the writer this small discrepancy did not materially affect the experiment as no attempt was made in this study to compare one school with another.

TABLE 6. DISTRIBUTION OF PUPILS PARTICIPATING IN THE STUDY BY SCHOOL, GRADE, AND COMMUNITY.

Community (1)	Grade 7 (2)	Grade 8 (3)	Grade 9 (4)	Total (5)
Newton	103	83	67	253
Natick	89	86	80	255
Stoughton	100	95	83	278
Totals	292	264	230	786

Experimental Procedure. Prior to the start of the investigation, meetings were arranged by the principal of each school between the writer and the teachers who were to participate in the experiment. The principal also designated one teacher to have general supervision of the experiment in his school, upon whom the writer could call for assistance whenever needed. At these preliminary meetings the participating teachers were given a mimeographed sheet of instructions entitled "Suggestions to Teachers Cooperating in the Study of Checks and Balances."[10] After a careful reading of the printed directions a detailed discussion followed on all points connected with the experiment, and any differences of opinion as to how the study was to be carried out were thoroughly aired and decisions arrived at. It was

[10] A sample of this instruction sheet is found in Appendix C, p. 109.

agreed at these preliminary meetings that no information as regards the study itself would be given to the pupils of either the control or experimental groups. It was further agreed that the directions for administering the tests would be faithfully carried out in accordance with the directions specified.

On the first day of the study both control and experimental groups were given a pre-test. Two class periods of 45 minutes each were allotted to the pre-testing. No information was given to the pupils about any future testing or teaching. For three days following the administration of the pre-test, the experimental groups were given three 45 minute teaching lessons on the topic of checks and balances in our national government. Five days after the teaching was concluded, both the control and experimental groups were given a post-test.

Teaching Procedure. Twenty-one teachers were involved in this study, a fact which suggested the probability of a variety of teaching materials and methods. The possibility that the experiment would be influenced by any one particular teaching method was avoided, since the directions to the participating teachers suggested that they use the same procedures and techniques that they would ordinarily employ in teaching the subject of checks and balances to their respective classes. The reports received at the conclusion of the study indicated that a great variety of approaches to the

study of checks and balances prevailed. In one school, for example, the study was being conducted during the last state election, and the teacher of this particular class used the election and its meaning in relation to the national scene as the starting point. Another teacher introduced the topic by listing on the blackboard a series of problems concerning checks and balances which the pupils were asked to solve. Selected readings were assigned to assist them in finding answers to the problems. Several other teachers used a developmental approach to the topic through the use of printed charts which they already had in their classrooms and which showed the frame-work of our federal government and its various branches. In some classrooms the open textbook method was employed and the topic was developed through the directed study approach. Visual aids in the form of charts and pictorial materials were used by all teachers. Thus there was ample differentiation in teaching procedures used in the study. Gains in scores made by the pupils could not result from a particular teaching technique.

Scoring the Test

The tests were scored on the basis of each one of the 68 items being marked right or wrong and the total score that each pupil received equalling the total number of items marked correctly. Following the scoring of the pre-test and post-test of each pupil, a general purpose table was constructed

which included in addition to the scores obtained by each pupil, his chronological age and intelligence quotient.[11] From the data in the general purpose table the analysis of variance technique was used to test for significance of change in the mean scores obtained by the control and experimental groups in both the pre-test and post-test, for each group independently, and among the groups. Both *t* and *F* values were computed on an International Business machine, Computer No. 650, at the Boston University Statistical Service.

Analysis of Variance

Significance of Analysis of Variance Technique. The analysis of variance technique was selected in order to test the significance of the variation of means for the control and experimental groups in each grade in both pre-test and post-test. The accuracy of analysis of variance is ably presented by Johnson who stated:

> The efficiency of its (analysis of variance) use in testing if a group of samples may be regarded as having come from the same homogeneous population, is clearly illustrated by comparison with the traditional bimetric method used for such purposes. In the latter, it is customary to calculate independently a standard error for each of the possible comparisons of the means of the several samples. The labor involved in this procedure is not its only objection. The chief objection

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[11] See Appendix D, pp. 112-123.

is that in many cases, it may be concluded that the larger part of the observed differences is attributed to random sampling errors, and that a more accurate, as well as much less complicated analysis would result by pooling the sums of the squares of the deviations from the different means, and by applying the combined estimate in the test of significance. This change introduced by the analysis of variance method serves to provide an exact test of the null hypothesis and hence, it is used habitually by modern research workers. Thus the method makes use of the relevant information contained in the data, since it takes into account the sampling distribution of statistics of the same kind.[12]

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[12] Johnson, P. O., Statistical Method in Research, pp. 93-94.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF THE DATA

The purpose of this chapter is twofold: (1) to present and to analyze the results of the pre-test and post-test for the control and experimental groups and (2) to analyze the various categories of test items contained in the measuring instrument.

Findings Relative to the Control and Experimental Groups

Through the employment of the analysis of variance technique it was possible to establish both F values and t values, to determine the significance of these values, and either to accept or reject the null hypotheses formulated in Chapter I. Further, by analyzing and interpreting the data one can add evidence to the problem under investigation, proper grade placement of checks and balances in our federal government.

Analysis of Means for the Control Groups. The means obtained by both control and experimental groups in the pre-test and post-test are presented in Figure 1. These results indicate that the mean scores of the control groups, although increasing from grade to grade, remained relatively constant on both pre-tests and post-tests at each grade level. The

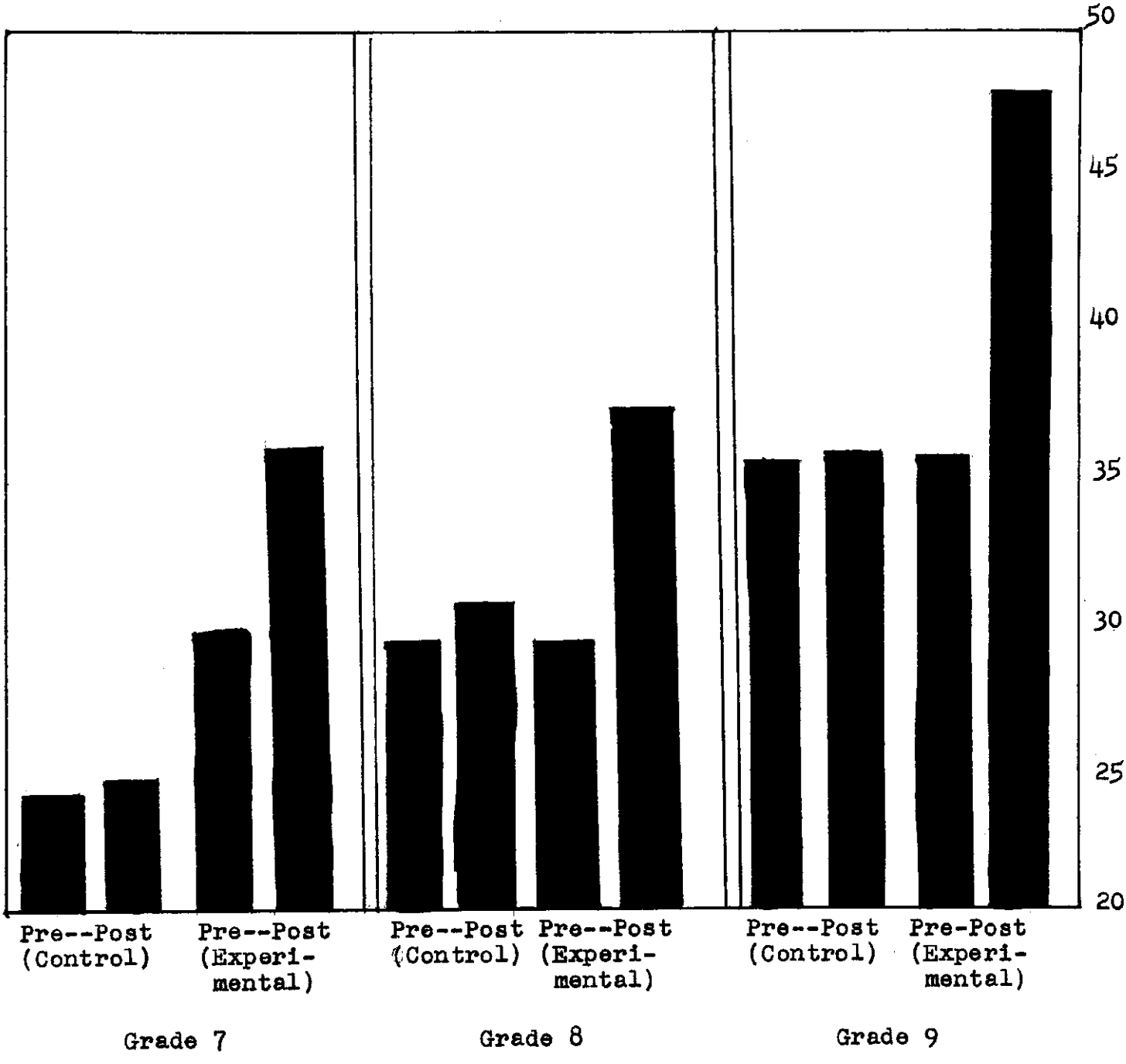

Figure 1. Comparison of Mean Scores of Control and Experimental Groups on Pre-test and Post-test.

mean score of 23.38 in the pre-test of grade 7 and the mean score of 24.07 in the post-test represented only a slight change. A similar situation prevailed in grades 8 and 9. In grade 8 the mean in the pre-test for the control group was 29.74; for the post-test, 30.31. In grade 9 the mean for the pre-test was 35.22 and for the post-test, 35.78. These mean scores indicated a rather stable performance for the control groups on pre-tests and post-tests at all grade levels.

Analysis of Means for the Experimental Groups. The experimental groups showed a very different pattern. In grade 7 the experimental groups achieved a mean score of 29.93 in the pre-test and a mean score of 35.23 in the post-test. This represented a gain of 5.3 points in the post-test mean score over the pre-test mean score registered for the grade 7 experimental groups. The mean score obtained by the grade 8 experimental groups in the pre-test was 28.87 and in the post-test, 36.35. This represented a gain of 7.48 points for the experimental groups in grade 8. For the experimental groups in grade 9 the mean score of the pre-test was 33.59 and for the post-test, 46.96. This represented a gain of 13.37 points for grade 9 experimental groups. These results clearly indicated that the pupils who comprised the experimental groups in grade 9 scored observably higher than did the pupils who made up the experimental groups in

grades 7 and 8.

Comparison of the Means of the Control and Experimental Groups. A comparison of the mean scores obtained by the control and experimental groups revealed differences at all grade levels. While the mean scores of the control groups remained relatively stable in both pre-test and post-test at each grade level, the experimental groups all gained substantially in mean scores in the post-test over mean scores obtained in the pre-test. The post-test scores for the experimental groups exceeded those of the control groups by 5.30, 7.48, and 13.37 respectively in grades 7, 8, and 9. The significance of difference in means for the control and experimental groups is presented in Tables 9, 10, 11, and 12.

The gains registered by the pupils of the experimental groups in grades 7, 8, and 9 over those of the control groups for the same grades resulted from the three teaching lessons which the pupils of the experimental groups received on the topic of checks and balances in our federal government. It should be noted from the above mean scores that the gains made by the pupils in grade 9 were considerably higher than the gains in mean scores achieved by the experimental groups in grades 7 and 8.

Analysis of the Significance of Mean Differences for Control Groups by Grades. The differences between the pre-test and post-test means for the control groups at each grade level, using the pooled estimate of the residual variances, are presented in Table 7. In calculating the values of F the formula used was:

$$F = n\ (\bar{X}_1 - \bar{X})^2 + n\ (\bar{X}_2 - \bar{X})^2 \qquad (1)$$

$$t = \sqrt{F}$$

Consulting the Table of t one finds the critical value of t with one and 287 degrees of freedom at the one per cent level of confidence to be 2.576 (interpolated).[2] Since the computed value of t for each of the control groups is less than this figure, we may accept the null hypothesis that there are no significant differences between the pre-test and post-test scores for each of the grade levels participating. The lack of instruction on the topic of checks and balances is clearly indicated from the data.

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[1] Wert, J. E., Neidt, C. O., and Ahman, J. S., Statistical Methods in Education and Psychological Research, p. 179.

[2] Ibid., p. 418.

TABLE 7. SIGNIFICANCE OF DIFFERENCES IN MEANS FOR THE CONTROL GROUPS BY GRADES

	Means		Difference in Means	t test
	Pre-test	Post-test		
Grade 7	23.38	24.07	.69	1.19
Grade 8	29.74	30.31	.57	1.68
Grade 9	35.22	35.78	.56	1.75

Analysis of the Significance of Mean Differences for Experimental Groups by Grades. The differences between the pre-test and post-test means for the experimental groups at each grade level, using the same formula as was used for the control groups, are presented in Table 8.

TABLE 8. SIGNIFICANCE OF DIFFERENCES IN MEANS FOR THE EXPERIMENTAL GROUPS BY GRADES.

	Means		Difference iin Means	t test
	Pre-test	Post-test		
Grade 7	29.93	35.23	5.30	11.5
Grade 8	28.87	36.35	7.48	15.5
Grade 9	33.59	46.96	13.37	25.6

Again consulting the Table of t one finds the critical value of t at the one per cent level of confidence to be 2.576 (interpolated). Since the computed value of t for

each of the experimental groups exceeds this figure, we may reject the null hypothesis that there are no significant differences between the pre-test and post-test scores for each of the grade levels participating. That the pupils of the experimental groups benefited from the instruction given on the topic of checks and balances is apparent from the data.

Application of F Tests to Experimental Groups. The results of an F test to determine if there are any statistically significant differences among the means of the obtained scores for the experimental groups in grade 7 from pre-test to post-test are presented in Table 9. The formula used was :

$$F = \frac{\text{mean squares of the groups}}{\text{mean squares of the subjects}} \qquad (3)$$

The values under the heading mean squares were obtained by dividing the value for the sums of squares by the corresponding degrees of freedom. The value of F for the groups was obtained by dividing the mean squares of the groups by the mean squares of the subjects.

Consulting the table of F, one finds the critical value of F with one and 289 degrees of freedom at the one

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[3] Ibid., p. 176.

per cent level of confidence to be 6.70 (interpolated).[4] Since the computed level of F for the group is 65.66, F is statistically significant and there is reason for rejecting the null hypothesis that there are no significant differences with regard to the obtained scores in pre-test and post-test for the pupils in grade 7 experimental groups. The computed value of F for the Trials was 123.80; for the Groups X Trials, 41.76, and for the subjects, 9.38. Reference to the Table of F[5] also indicates statistical significance at the one per cent level of confidence. The instruction which this group received on the topic of checks and balances is undoubtedly reflected in the significant gains made by the pupils in the post-test over pre-test.

TABLE 9. ANALYSIS OF VARIANCE FOR OBTAINED SCORES, PRE-TEST AND POST-TEST (EXPERIMENTAL GROUPS, GRADE 7).

Sums of Squares		Degrees of Freedom	Mean Squares	F
(1)		(2)	(3)	(4)
Totals	62591.9	501		
Groups	10194.77	1	10194.77	65.66*
Trials	2048.90	1	2048.90	123.80*
Groups X Trials	691.21	1	691.21	41.76*
Subjects	44873.15	289	155.57	9.38*
Residual	4783.15	289	16.55	

*Statistically significant at the one per cent level of confidence.

[4] Ibid., p. 422

[5] Ibid., p. 422.

The results of an F test to determine if there are any significant differences in scores by the experimental groups in grade 8 in the pre-test and post-test are presented in Table 10.

TABLE 10. F TEST TO DETERMINE SIGNIFICANCE OF DIFFERENCES BETWEEN SCORES OF PRE-TEST AND POST-TEST FOR EXPERIMENTAL GROUPS IN GRADE 8.

Sums of Squares		Degrees of Freedom	Mean Squares	F
(1)		(2)	(3)	(4)
Totals	51295.5	527		
Groups	787.44	1	787.44	5.01*
Trials	3508.18	1	3508.18	206.85**
Groups X Trials	1409.57	1	1409.57	83.11**
Subjects	41145.52	262	157.04	9.26**
Residual	4444.75	262	16.96	

*Statistically significant at the one per cent level of confidence.

**Statistically significant at the five per cent level of confidence.

Again consulting the F table, the critical value of F for one and 262 degrees of freedom was found to be 3.88 (interpolated) at the five per cent level of confidence. Since the

computed value of F for the groups is 5.01, F is statistically significant at the five per cent level of confidence for the groups. The F table reveals that the critical value of F at the one per cent level of confidence was found to be 6.72 (interpolated). Since the computed value of F for the Trials was 83.11; and for the subjects 9.26, these are statistically significant at the one per cent level of confidence. Consequently the null hypothesis that there are no significant differences in the experimental groups in grade 8 is not sustained. It is apparent that the experimental groups in grade 8 also benefited from the teaching lessons which they received on the subject of checks and balances.

To determine if any significant differences existed between the mean scores of the pre-test and post-test for the experimental groups in grade 9, the F test was once more applied. The results are presented in Table 11.

TABLE 11. F TEST TO DETERMINE SIGNIFICANCE OF DIFFERENCES BETWEEN SCORES OF PRE-TEST AND POST-TEST FOR EXPERIMENTAL GROUPS IN GRADE 9.

Sums of Squares		Degrees of Freedom	Mean Squares	F
(1)		(2)	(3)	(4)
Totals	49010.0	465		
Groups	2434.93	1	2434.93	19.71*
Trials	9044.64	1	9044.64	453.37*
Groups X Trials	4382.11	1	4382.11	219.65*
Subjects	28539.59	231	123.54	6.19**
Residual	4608.75	231	19.95	

*Statistically significant at the one per cent level of confidence.

**Statistically significant at the five per cent level of confidence.

The table of F was entered with one and 231 degrees of freedom and the critical value of F was found to be 6.75 at the one per cent level of confidence (interpolated). Since the computed value of F is 19.71 for the Groups; 453.37 for the Trials; and 219.65 for the Groups X Trials, F is statistically significant. The value of F for one and 231 degrees of freedom in the F table was found to be 3.88 (interpolated).

Since the computed value for F for the Subjects is 619, F is statistically significant at the five per cent level of confidence. Thus, we may reject the null hypothesis set up in Chapter I that there are no significant differences between the scores of the experimental groups in the pre-test and post-test in grade 9.

Tests of Significance Among the Control Groups in Grades 7, 8, and 9. To test whether or not there were any statistically significant differences existing among each of the control groups in grades 7, 8, and 9, the F test was once again applied to the means obtained in the pre-test and post-test by the pupils comprising the control groups in these three grades. The chief purpose of applying the F test to these groups was to measure the interaction, if any, that had taken place among the pupils of these grade levels, and to determine if any significant growth pattern had occurred among the pupils making up the control groups between pre-test and post-test scores. It was these groups which took the pre-test and post-test but received no instruction relative to the concepts of checks and balances in our federal government. The results of the analysis of variance for the control groups are presented in Table 12.

Consulting the table of F, the critical value of F for two and 267 degrees of freedom was found to be 4.67 at the one per cent level of confidence (interpolated). Since the computed value for F is 50.76 for the Groups and 10.58 for

for the Subjects, F is statistically significant at the one per cent level for the Groups and Subjects. The critical value of F for 2 and 267 degrees of freedom was found to be 3.02 (interpolated) at the five per cent level of confidence. Since the computed value for F for the Trials is 4.36, F is statistically significant at the five per cent level of confidence. Since the computed value of F for the Groups X Trials is .02, this F value is not statistically significant at either the one or five per cent level of confidence. An F value of .02 for the Groups X Trials indicated that the interaction or growth pattern was negligible among the control groups. The statistically significant F value for the Groups, Trials, and Subjects resulted from the fact that the mean scores in grades 8 and 9 were considerably higher than those of grade 7. This would be due largely to maturation, which increases with each age and grade group. We may, therefore, accept the null hypothesis that there are no significant differences among the control groups for grades 7, 8, and 9.

TABLE 12. F TEST TO DETERMINE SIGNIFICANCE OF DIFFERENCES BETWEEN SCORES OF PRE-TEST AND POST-TEST FOR THE CONTROL GROUPS IN GRADES 7, 8, AND 9.

Sums of Squares		Degrees of Freedom	Mean Squares	F
(1)		(2)	(3)	(4)
Totals	48767.7	539		
Groups	12560.25	2	6280.12	50.76*
Trials	51.02	1	51.02	4.36**
Groups X Trials	.48	2	.24	.02
Subjects	33034.49	267	123.72	10.58*
Residual	3124.50	267	11.69	

*Statistically significant at the one per cent level of confidence.

**Statistically significant at the five per cent level of confidence.

Tests of Significance among the Experimental Groups in Grades 7, 8, and 9. An F test to determine whether or not there were any statistically significant differences among the experimental groups in grades 7, 8, and 9 resulted in a very different pattern. Consulting the table of F the critical value of F was found to be 4.62 at the one per cent level of confidence. Since the computed value of F for the

Groups is 39.69; for the Trials, 874.09; Groups X Trials, 68.56; and for the Subjects, 7.61, F is statistically significant at the one per cent level of confidence for all groups. The results are presented in Table 13.

It should be noted that an F value of 68.56 for the Groups X Trials for the experimental groups indicates significant interaction, and points to the fact that a substantial pattern of growth resulted between pre-test and post-test for the pupils in the experimental groups. Thus, we may reject the null hypothesis that no significant differences exist among the experimental groups in grades, 7, 8, and 9.

TABLE 13. F TEST TO DETERMINE SIGNIFICANCE OF DIFFERENCES BETWEEN SCORES OF THE PRE-TEST AND POST-TEST FOR EXPERIMENTAL GROUPS IN GRADES 7, 8, AND 9.

Sums of Squares		Degrees of Freedom	Mean Squares	F
(1)		(2)	(3)	(4)
Totals	125837.9	1035		
Groups	12565.12	2	6282.56	39.69*
Trials	18181.08	1	18181.08	874.09*
Groups X Trials	2852.03	2	158.29	68.56*
Subjects	81523.77	515	20.80	7.61*
Residual	110715.89	515		

*Statistically significant at the one per cent level of confidence.

Analysis of the Various Categories of the Test

The measuring instrument used in this study consisted of 68 items. These items were classified under four headings: (1) multiple choice; (2) matching; (3) true-false; (4) problem situations. In order to discover how well the pupils of each grade achieved in each of the four categories of items, an item analysis was done. Such an analysis might be helpful in determining proper grade placement of the topic under investigation.

A sample population consisting of scores made by every other pupil in the experimental groups in pre-test was selected. These items were grouped under four headings; namely, right-right (RR); wrong-right (WR); right-wrong (RW); and wrong-wrong (WW). If a pupil marked an item correctly in both pre-test and post-test, a tally was placed under the column marked RR. If a pupil marked an item incorrectly in the pre-test and marked the item correctly in the post-test, a tally was placed under the column headed WR. If a pupil marked an item correctly in the pre-test but wrong in the post-test, a tally was placed under the column headed RW. If an item was scored as wrong in both pre-test and post-test, a tally was placed in the column marked WW. The unmarked items were placed under the column marked WW. When the tally sheets were completed, the totals were divided by the number of pupils at each grade level in each of the four categories of the test. A percentage was established for

each of the four headings and for each category of items at each grade level. The results of this item analysis is presented in Table 14 and Figures 2-5.

Multiple Choice Items. In this group of items a steady increase in percentages is noted for each advancing grade in the column headed WR. Grade 7 showed 33 per cent increase in correct answers, grade 8 showed 39 per cent, and grade 9 showed 45 per cent. In the WW column a decrease is also indicated for each higher grade. The per cent of pupils in the grade 7 sample who marked this category of items incorrectly on both pre-test and post-test was 23; in grade 8 this figure dropped to 18; and in grade 9 only 10 per cent of the sample marked the wrong answer in both pre-test and post-test. In the RR column the per cents also increased at each advancing grade level.

Matching Items. In this classification of items much the same pattern prevailed as in the multiple choice group of items. Grade 9 again scored the highest per cent in the WR column with 42 per cent, and the lowest in the WW column with 20 per cent.

True-False Items. In this group of items a slightly different trend prevailed. In the WR column both grade 7 and 8 were tied with 32 per cent increase in correct answers. The pupils of the grade 9 sample showed a 42 per cent increase, indicating a substantial increase over grades 7 and 8.

Problem Items. In this category of items a definite trend in percentages in favor of grade 9 is clearly indicated. In the WR column the grade 7 sample obtained only 20 per cent increase in correct answers, grade 8 achieved a substantial gain over grade 7, with a 31 per cent increase; and in grade 9 this rose to 42 per cent. The fact that only 20 per cent of the grade 7 pupils seemed to have benefited by the instruction they received on the topic of checks and balances indicates that this grade level would not be the most effective place in the junior high school for teaching checks and balances in our national government. It should be further noted that 51 per cent of the grade 7 sample marked incorrect answers on both pre-test and post-test, reflecting that only a small amount of learning took place as a result of the instruction which these pupils received. In the WW column in grade 8 the per cent of pupils who marked wrong answers in both pre-test and post-test was 36. In grade 9 this figure rose to 42 per cent. In the column headed RW the per cents are relatively low and represent no more than seven per cent in grade 8 and five per cent in grade 9.

TABLE 14. ITEM ANALYSIS OF THE FOUR CATEGORIES OF ITEMS CONTAINED IN THE INSTRUMENT.

Grade 7				Grade 8				Grade 9			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
				Multiple Choice Items							
*RR	**WR	#RW	'WW	RR	WR	RW	WW	RR	WR	RW	WW
32	33	12	23	36	39	07	18	40	45	05	10
				Matching Items							
25	30	09	36	28	35	07	30	35	42	03	20
				True-False Items							
23	32	11	34	39	32	05	24	41	43	05	11
				Problem Items							
14	20	15	51	30	31	03	36	26	42	03	29

*RR = Percentage of pupils marking correct responses in both pre-test and post-test.

**WR = Percentage of pupils marking wrong response in pre-test and correct response in post-test.

#RW = Percentage of pupils marking correct response in pre-test and wrong response on post-test.

'WW = Percentage of pupils marking incorrect responses in both pre-test and post-test.

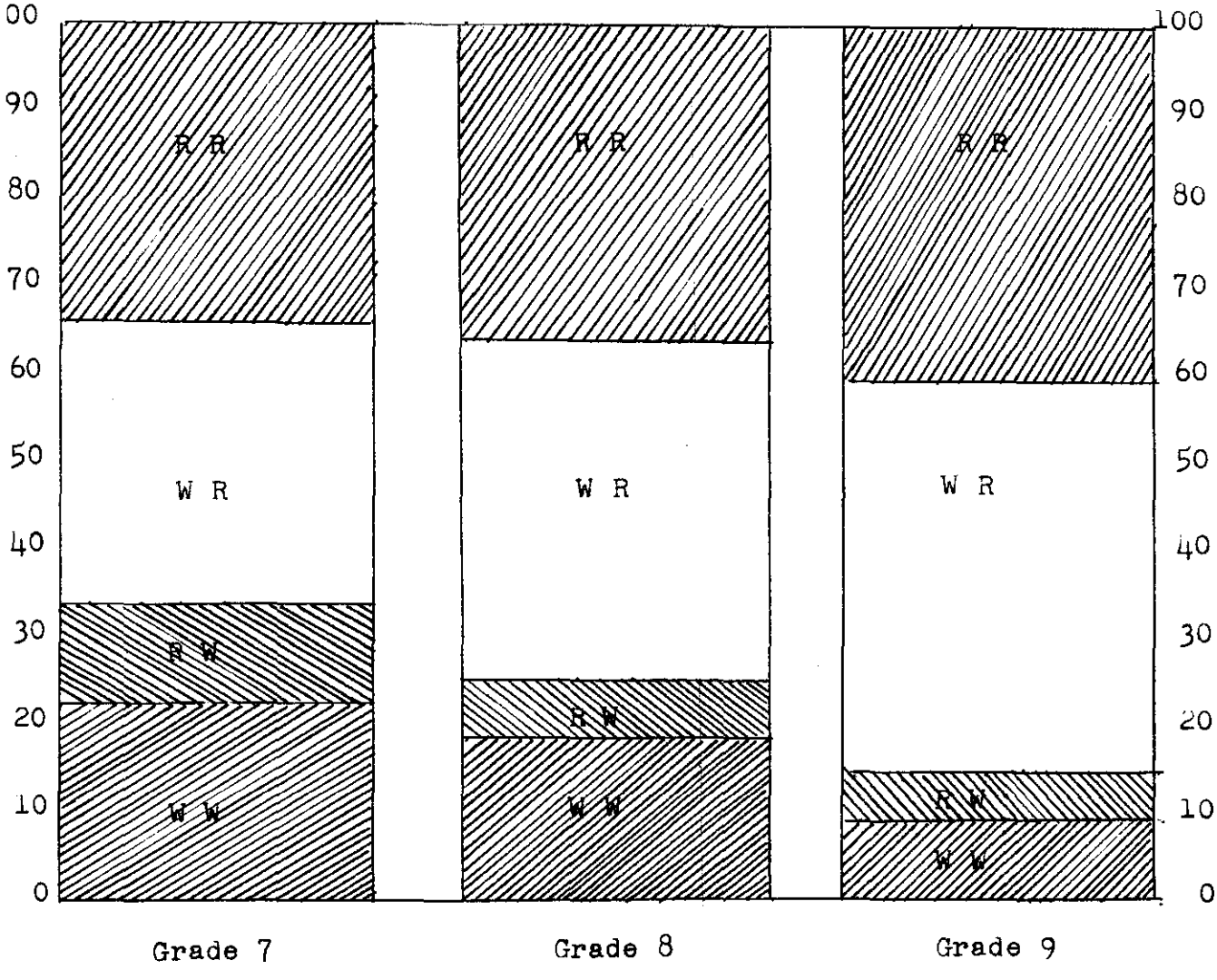

Figure 2. Item Analysis of Multiple Choice Items: Experimental Groups.

Legend: R R Percent of Items Marked Right on both Pre-test and Post-test.

W R Percent of Items Marked Wrong on Pre-test and Right on Post-test.

R W Percent of Items Marked Right on Pre-test and Wrong on Post-test.

W W Percent of Items Marked Wrong on both Pre-test and Post-test.

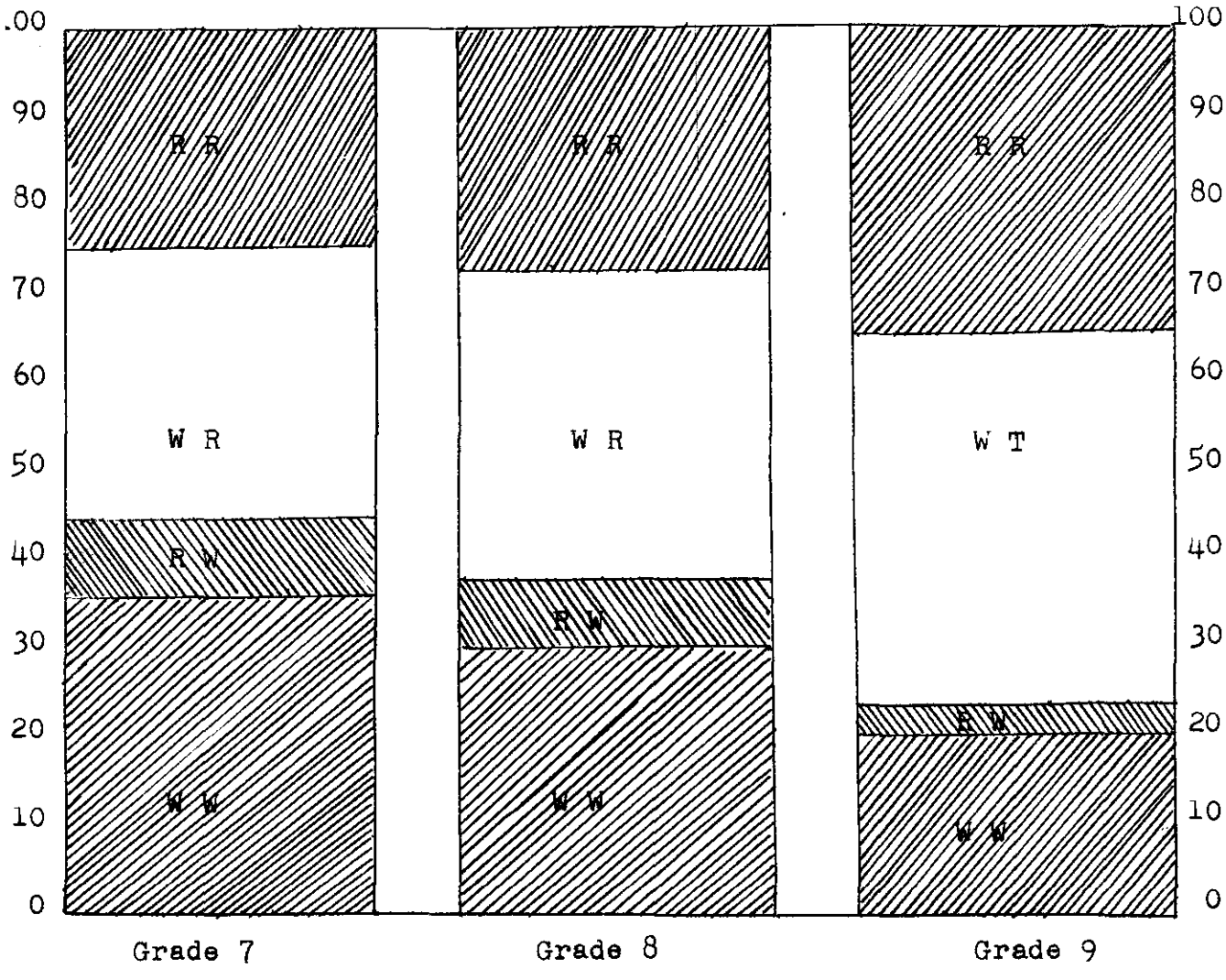

Figure 3. Item Analysis of Matching Items: Experimental Groups.

Legend: R R Percent of Items Marked Right on both Pre-test and Post-test.

W R Percent of Items Marked Wrong on Pre-test and Right on Post-test.

R W Percent of Items Marked Right on Pre-test and Wrong on Post-test.

W W Percent of Items Marked Wrong on both Pre-test and Post-test.

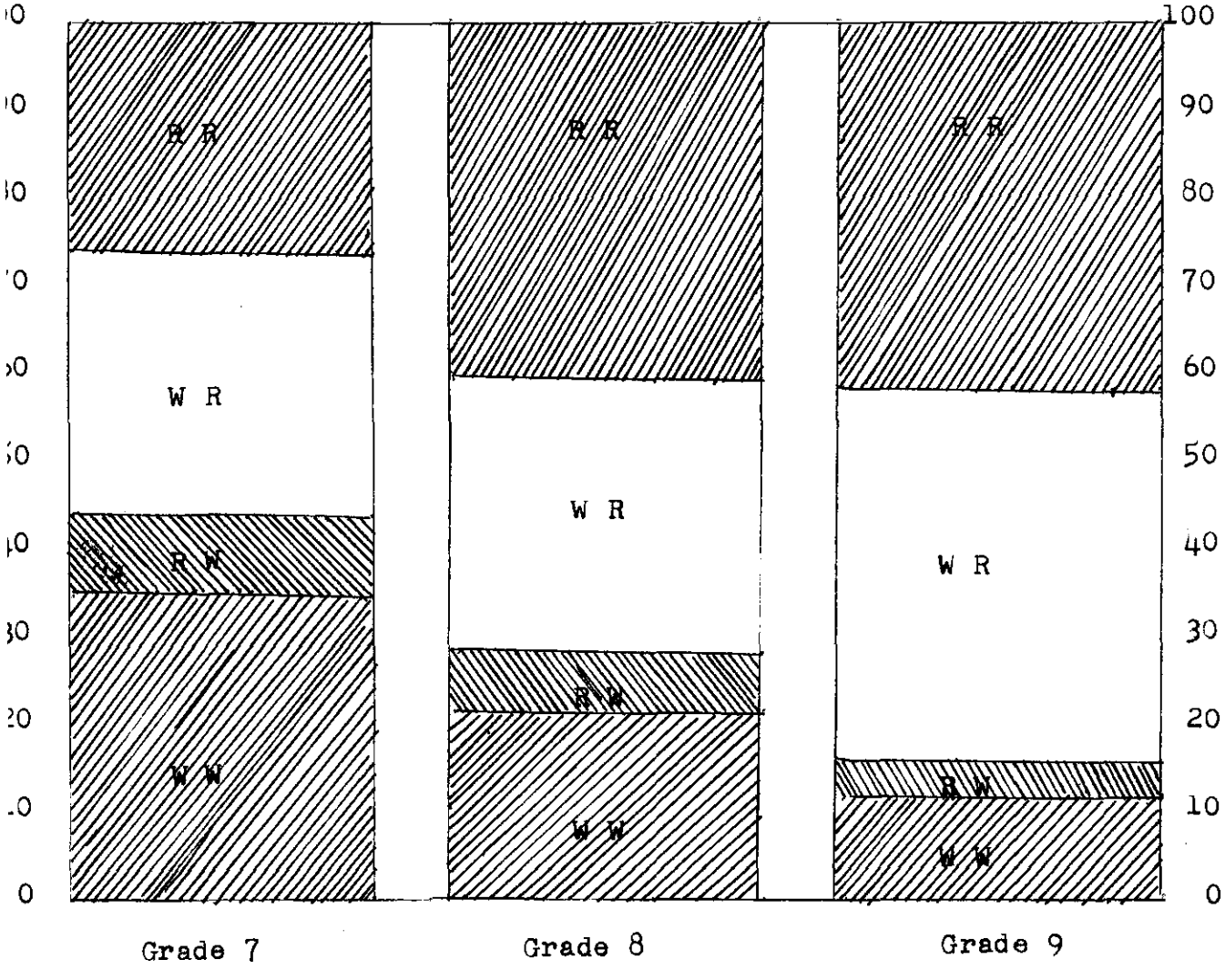

Figure 4. Item Analysis of True-False Items: Experimental Groups.

Legend: R R Percent of Items Marked Right on both Pre-test and Post-test.

W R Percent of Items Marked Wrong on Pre-test and Right on Post-test.

R W Percent of Items Marked Right on Pre-test and Wrong on Post-test.

W W Percent of Items Marked Wrong on both Pre-test and Post-test.

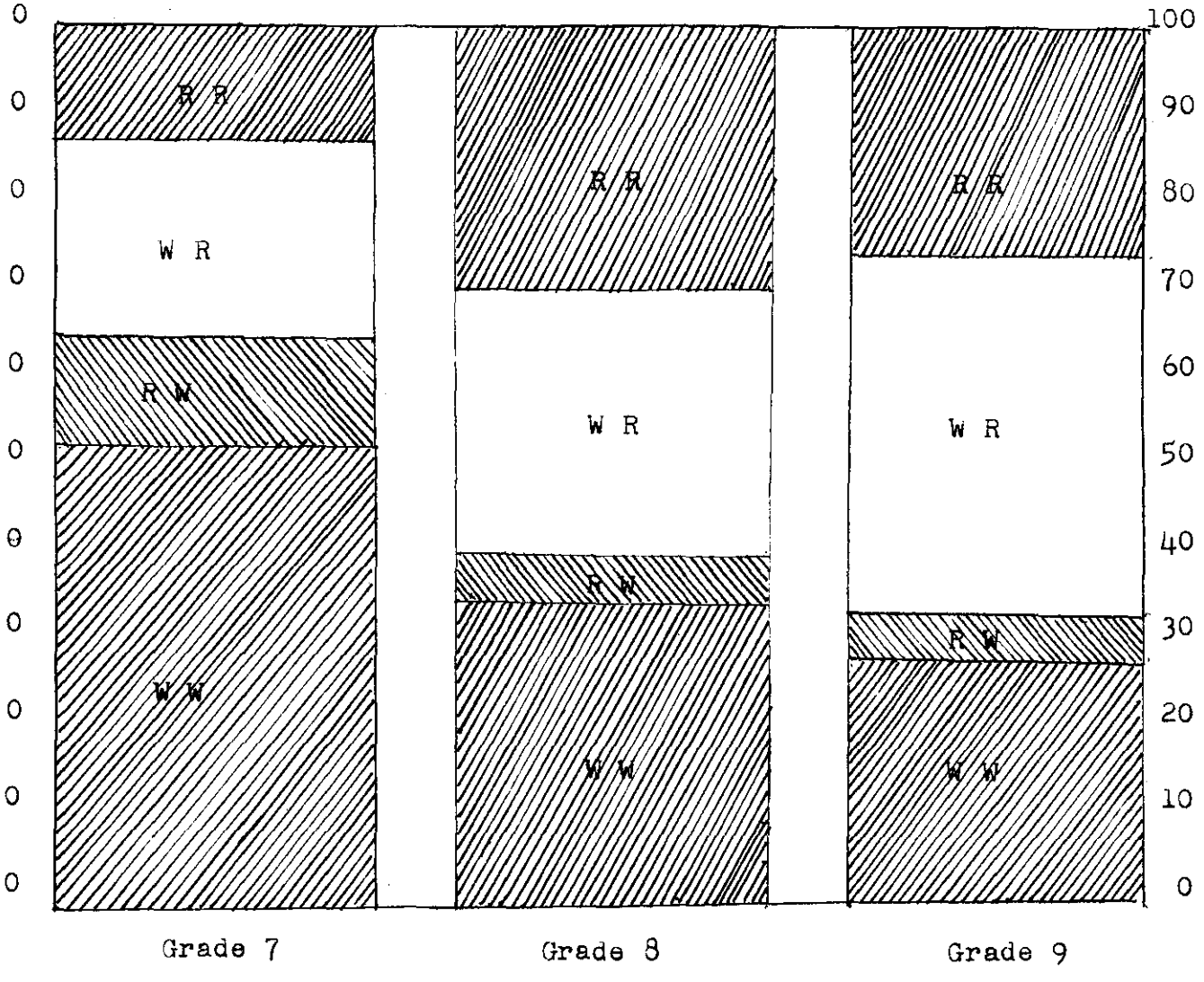

Figure 5. Item Analysis of Problem Items; Experimental Groups.

Legend: R R Percent of Items Marked Right on both Pre-test and Post-test.

W R Percent of Items Marked Wrong on Pre-test and Right on Post-test.

R W Percent of Items Marked Right on Pre-test and Wrong on Post-test.

W W Percent of Items Marked Wrong on both Pre-test and Post-test.

Further Comparison of Groups. In an attempt to find an answer to the problem of grade placement of checks and balances, the per cent of pupils in the experimental groups in each grade who marked correctly fifty per cent or more of the items was computed. The results are presented in Figure 6. It should be noted that only 37 per cent of the pupils of grade 7 experimental groups answered correctly at least half the test items; in grade 8 this figure rose to 57 per cent; and in grade 9 the per cent of pupils in the experimental groups who answered correctly at least half the items was 92.

It is the opinion of the writer that a close analysis of the data presented in this chapter clearly points to grade 9 as the optimum grade level in the junior high school for the teaching of checks and balances in our federal government. A complete list of findings, conclusions and recommendations for further research follows in Chapter V.

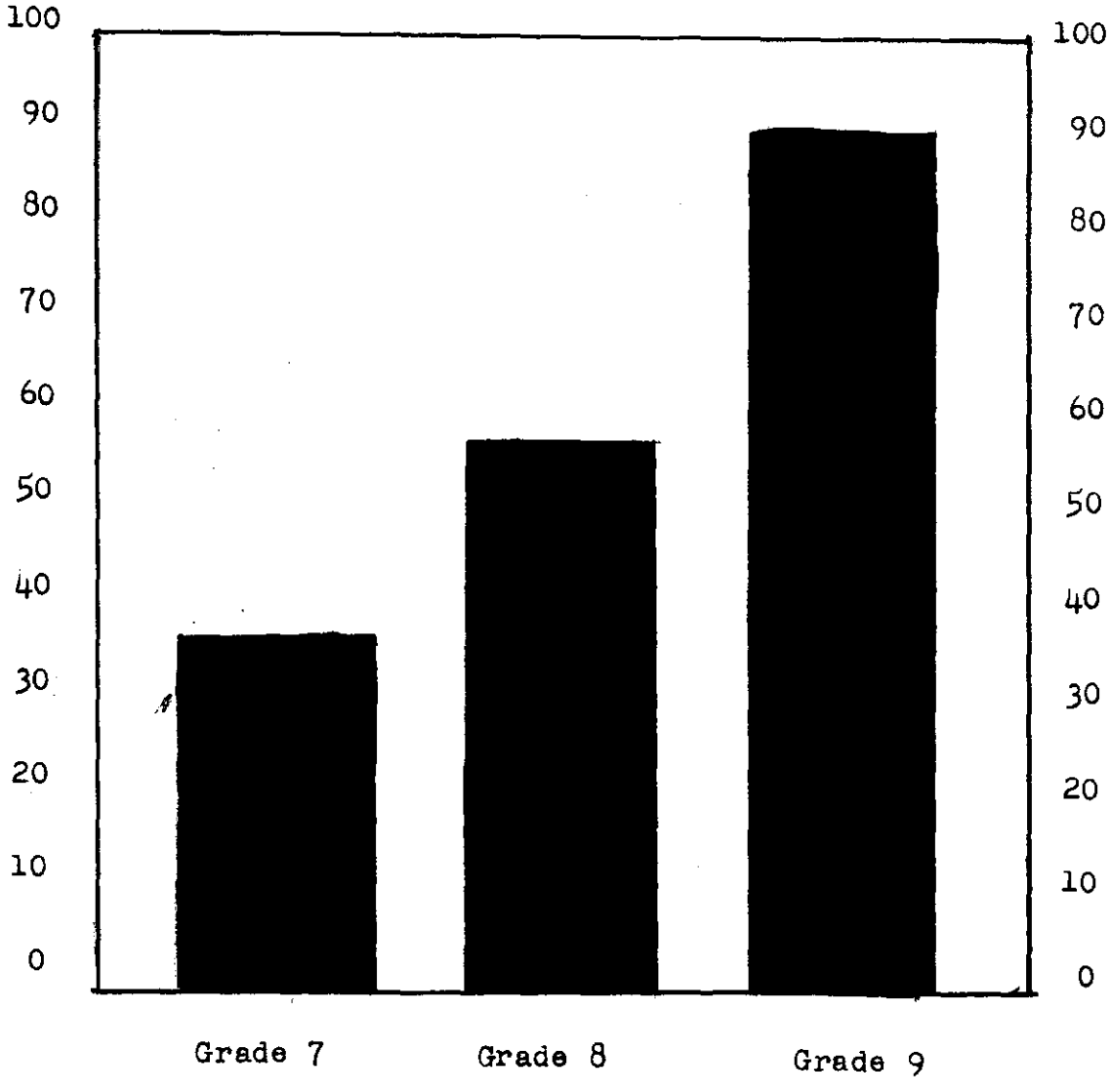

Figure 6. Percent of Pupils in Experimental Groups in Each Grade Who Marked Correctly Fifty Percent or More of the Test Items in the Post-Test.

CHAPTER V

MAJOR FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The primary purpose of the present investigation was to determine, if possible, whether or not a concept in the social studies area would be more suitable for learning at one grade level of the junior high school than at any other. Data were collected and analyzed to determine the optimum grade placement of the concept of checks and balances in our federal government.

A review of the literature in this area revealed that the topic of checks and balances has been taught at various grade levels of the upper elementary and junior high schools, ranging from the fifth grade through the ninth. Grade 8 seemed to be the most popular grade in the junior high school social studies program for the teaching of this topic.

One aspect of the present study was to determine if present assumptions concerning the grade placement of checks and balances are valid. The writer did not expect to establish an absolute or rigid grade placement for this topic, but rather to indicate as a result of the study the grade level at which the teaching of checks and balances in our national government appears to be most effective. If optimum grade placement could be assigned to this and other topics within the social studies curriculum, a great deal of overlapping and unnecessary repetition might be eliminated

in future curriculum revisions.

In order to arrive at a reasonable conclusion as to the most effective grade placement for the subject of checks and balances, the writer employed an experimental approach. The procedure involved testing, teaching, and re-testing of materials under actual classroom conditions. A total of 786 pupils and 21 teachers from three Massachusetts communities participated in the experiment. The investigation concerned itself with junior high school only, involving grades 7, 8, and 9.

The pupils were divided into control and experimental groups with one control and two experimental groups at each grade level, making a total of nine control and 18 experimental groups in the three participating schools. Pupils of both groups were given a pre-test at the beginning of the experiment and a post-test at the end. The experimental groups received three teaching lessons on the topic of checks and balances between the pre-test and post-test. The control groups were given no instruction whatever on the topic of checks and balances.

Following the tabulation of the pre-test and post-test scores, the mean scores were established and analyzed. Tests of significance were applied by means of the F test to determine whether or not any gains in mean scores in post-test over pre-test were statistically significant at any grade level or among the three grades involved in the study.

Limitations of the Study

Because of the nature of the present study, findings and conclusions derived from the data are subject to a number of limitations. Major limitations are as follows:

1. The experiment was conducted in three communities all within the area of metropolitan Boston, and only at the junior high school level.

2. The investigation involved only a limited number of classes and pupils.

3. As indicated in the scope and plan of the study, the results and analysis of the data are applicable only to grades 7, 8, and 9 of the junior high schools which participated in the experiment.

4. No testing or teaching of pupils or attempts to grade place the concept of checks and balances took place below grade 7 or above grade 9.

5. Except for the pre-test given at the beginning of the study the results did not take into account the level of previous learning or extent of mastery of the application and understanding of the topic of checks and balances.

6. The total population involved in the study numbered 786. Thus the conclusions reached are based on the findings in the three participating junior high schools, and as such are applicable only to these schools.

7. No effort was made to control the methods and materials used in the instructional phase of the study. Each

teacher was asked to choose the particular techniques that he would regularly employ in teaching the topic of checks and balances.

8. No effort was made to equate the participating teachers.

9. The instrument used to measure the mastery or degree of achievement of the topic has only curriculum or constructional validity. No other statistical validity has been provided.

Findings of the Study

The following is a list of findings which were derived from the present study:

1. The mean scores for each grade level for the pupils of the control groups varied less than one per cent between the pre-test and post-test. In the pre-test only, the mean scores for the control and experimental groups in grades 8 and 9 were not significantly different at the one per cent level of confidence. The difference in mean scores for the grade 7 control and experimental groups showed a statistical difference at the one per cent level, however, since the F ratio for interaction in the post-test was significant at the one per cent level a co-variance adjustment was not deemed essential.

2. The mean scores for the experimental groups showed a different pattern from those of the control groups as the

mean scores for the experimental groups exceeded those of the control groups at each grade level in the post-test.

3. The pupils comprising the grade 7 experimental groups achieved a mean score of 29.93 in the pre-test and a mean score of 35.23 in the post-test. This represented a gain in the post-test of 5.3 points over the pre-test and is significant at the one per cent level.

4. The mean score obtained by the pupils of grade 8 experimental groups in the pre-test was 28.87. This was slightly lower than the pre-test for grade 7. The post-test mean for grade 8 experimental groups was 36.35. This represented a gain of 7.48 in the post-test over pre-test, and a gain of 2.18 points in favor of grade 8 over grade 7. This gain in mean scores for the grade 8 experimental groups is also significant at the one per cent level.

5. The pupils of grade 9 experimental groups achieved a mean score of 33.59 in the pre-test and 46.96 in the post-test. This represented a gain in mean scores for grade 9 experimental groups of 8.01 points over grade 7, and 5.9 over grade 8. The gains made by the grade 9 experimental groups are also significant at the one per cent level. These results indicate that the pupils of the experimental groups in grade 9 scored significantly higher than did the pupils of grades 7 and 8.

6. In the experimental groups the pupils of grade 9 achieved a gain of more than two-and-a-half times as great

as that achieved by the pupils of grade 7 and one-and-a-half times as great as that achieved by the pupils of grade 8 in the post-test.

7. Significant differences were found to exist among the experimental groups in grades 7, 8, and 9 between pre-test and post-test. There were no comparable significant differences found between the pupils comprising the control groups at these grade levels .

8. Complete mastery of the topic of checks and balances was not achieved by any pupil in the study as no one was successful at all the test items at any grade level. It appears that among the items which tested the application and understanding of the concept of checks and balances that the lowest degree of mastery was registered. In this category only 49 per cent of the grade 7 sample gave correct answers in both pre-test and post-test. In grade 8 this figure increased to 64 per cent and in grade 9 to 71 per cent. Thus it appears that the pupils of grade 9 benefited the most and grade 7 pupils the least as a result of instruction on the topic of checks and balances.

In the WR column (wrong-right) column only 20 per cent of the grade 7 pupils seemed to have benefited by the teaching on the topic; in grade 8 this figure increased to 31 per cent and in grade 9 to 42 per cent. These figures suggest perhaps the need for more emphasis on the teaching of the application and understanding of the concept of checks and

balances at all grade levels of the junior high school. There appeared to be little difference between the per cent of mastery of the topic between the average pupil in grade 7 and the average pupil in grade 8. At these levels the per cent of mastery was about 53 per cent. For grade 9 the per cent of mastery was about 69 per cent. On the basis of the results obtained in this study it might not be unreasonable to say that in the junior high schools involved, grade 9 appears to be favored as the grade level to teach the topic of checks and balances if growth in understanding is the criterion.

9. On the item analysis of the multiple-choice items a consistent increase was shown in the percentage of successes in the WR (wrong-right) column, and a steady decrease in the WW (wrong-wrong) column with each advancing grade.

10. In the category of matching items, an item analysis revealed a similar consistent increase in the WR (wrong-right) column and a steady decrease in the WW (wrong-wrong) column with each advancing grade.

11. An item analysis of the true-false items revealed that the percentage in the WR (wrong-right) column for grades 7 and 8 was 32 per cent, while the percentage for grade 9 was 43 per cent.

12. The item analysis of the problem category indicated that 51 per cent of the pupils comprising the grade 7 sample marked incorrect answers in both pre-test and post-test. In grade 8 this figure decreased in the WW (wrong-

wrong) column to 36 per cent and in grade 9 to 29 per cent.

13. The item analysis of the improvement in mean scores indicated that the grade 9 experimental groups showed greater improvement in all four categories of the test than did the pupils who made up the experimental groups in grades 7 and 8.

14. Although the communities in which the study was conducted varied in size, the total number of pupils who participated from each community was approximately the same. This was also true as to the number involved at each grade level.

15. In the ranges of ages and intelligence quotients the pupils in grade 7 ranged from 11 years - 0 months to 15 years - 4 months, the mean being 13 years - 2 months. The I.Q.'s ranged from 72 - 147 with a mean of 108.5. In grade 8 the ages ranged from 11 years - 11 months to 14 years - 10 months with the mean age being 12 years - 6 months. The I.Q.'s were from 72 - 132 with a mean I.Q. of 102. In grade 9 the age-range was from 13 years - 0 months to 16 years - 11 months with the mean age being 14 years - 5 months. The I.Q.'s for grade 9 ranged from 79 - 138 with a mean of 108.5.

Conclusions

An analysis of the data concerning the present study reveals the following conclusions:

1. The relatively constant mean scores in both pre-test and post-test registered by the control groups in grades 7, 8, and 9 point to a rather stable performance for

the control groups at all grade levels.

2. A gain in mean scores of 13.37 points made by the pupils comprising the grade 9 experimental groups in the post-test over the pre-test suggests that the concept of checks and balances would be learned more effectively at this grade level of the three junior high schools participating in the study.

3. The results of the item analysis of the four categories of the test further indicated that the understanding of the concept of checks and balances and especially the application of such understanding in problem situations also favor the placement of this topic at the ninth grade level.

Recommendations for Further Research

As a result of the present investigation the writer feels that additional research studies in grade placement of content and materials, as well as in other areas of the social studies, might prove useful to persons engaged in curriculum revision. A few such areas where additional research might be carried out with profit follows.

1. Additional grade placement studies with regard to major topics in the social studies field.

2. Survey studies concerned with the understanding and application of social studies concepts.

3. Research studies concerned with the retention of social studies concepts learned by pupils at various grade

levels.

4. Studies that are concerned with the effect of methods and materials on the grade placement of social studies topics.

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APPENDIX A

"Grade Placement Test on the Subject of Checks and Balances In Our Federal Government."

Part I. Multiple Choice Items

Directions: Below are several statements and questions, each is followed by four phrases. Blacken in on your answer sheet the letter which completes the statement correctly.

1. Presidential appointments need approval of the -

   a. House of Representatives.
   b. Cabinet.
   c. Supreme Court.
   d. Senate.

2. The most important duty of the President is to -

   a. enforce the laws.
   b. explain and interpret the laws.
   c. make the laws.
   d. elect members of the Senate.

3. The members of the Supreme Court are -

   a. elected by popular vote.
   b. appointed by the President with consent of the Senate.
   c. chosen by both houses of Congress.
   d. chosen by other members of the Supreme Court.

4. A system of checks and balances was placed in the Constitution in order that -

   a. The President might not hold office for more than two terms.
   b. The Congress would be the most powerful department in the Federal Government.
   c. Supreme Court justices would be independent of both the Congress and the President.
   d. No one branch of the Federal Government would be in complete control.

5. The Parliamentary system of England differs from ours in that -

   a. The Prime Minister and Cabinet are entirely independent of Parliament.
   b. The Prime Minister and Cabinet are also members of Parliament.
   c. The Prime Minister cannot be re-elected.
   d. Parliamentary elections in England take place annually.

6. The chief reason for the creation of three separate branches of our national government is to -

   a. give the President the most power.
   b. have each branch act as a check on the other two branches.
   c. make the Supreme Court entirely independent of Congress and the President.
   d. increase the power of the State governments.

7. A law to be passed over the President's veto must be -

   a. passed again by a two-thirds vote of both Houses of Congress.
   b. approved by the Supreme Court.
   c. submitted to the Legislatures of the States.
   d. passed again by a simple majority of both Houses of Congress.

8. The members of the Cabinet are -

   a. heads of governmental departments.
   b. members of Congress.
   c. justices of the Supreme Court.
   d. none of these.

9. The President decides to appoint Mr. James Smith as ambassador to England; this appointment is sent for confirmation to -

   a. both Houses of Congress.
   b. the Senate only.
   c. the Supreme Court.
   d. the Cabinet.

10. Our Cabinet differs from England's Cabinet because members of our Cabinet are -

   a. also members of the Senate.
   b. members of the House of Representatives.
   c. not members of the Legislative branch of the government.
   d. elected by popular vote.

11. A bill before reaching the President's desk must be passed by -

   a. both Houses of Congress.
   b. the Senate only.
   c. the House of Representatives only.
   d. the Cabinet.

12. The system of checks and balances in our Constitution aids in -

    a. establishing a dictatorship in our country.
    b. granting the President full control of the government.
    c. allowing the Congress to have complete control of our government.
    d. keeping the powers of one branch separate from those of the other two.

13. The fact that Congress is made up of two Houses serves -

    a. as an additional check and balance.
    b. to make both Houses of Congress weak.
    c. to destroy the idea of checks and balances.
    d. to make the Senate superior to the House of Representatives in the matter of law making.

14. Because the delegates to the Constitutional Convention were afraid that one department might become too powerful they -

    a. gave the Chief Executive control over the other two branches.
    b. made the Legislative branch inferior to the Executive and Judicial.
    c. made the Judicial branch very weak.
    d. worked out a system of checks and balances.

15. Matching Items

    Directions; In Column A you will find a list of departments of our Federal Government, and in Column B a list of powers which might apply to these departments. You are to place your answer sheet under No. 15 the correct number from Column B which matches the small letter in Column A.

Column A	Column B
a. House of Representatives	1. decides Constitutionality of laws.
b. Senate	2. has veto power.
c. Executive Branch	3. confirms many appointments.
d. Congress	4. has sole power of impeachment.
e. Supreme Court	5. has power to declare war.
	6. is our Department of Justice.
	7. elects Governors of the States.

16. Matching Items

Directions: In Column A you will find a list of offices in our Federal Government, and in Column B a list of duties which might apply to these offices. You are to place in your answer sheet under No 16 the correct number from Column B which matches the small letter in Column A.

Column A	Column B
a. Attorney-General	1. presides over the House of Representatives.
b. Chief Justice	2. is Chief Executive of one of the forty-eight states.
c. Vice-President	3. is in charge of foreign affairs.
d. Secretary of State	4. is President of the Senate
e. Speaker	5. presides over impeachment trial of a president.
	6. is head of the department in charge of internal affairs.
	7. is in charge of the department of Justice.

17. Matching Items

Directions: In Column A there is a list of offices in our Federal Government, and in Column B a list of duties which might apply to these offices. You are to place in your answer sheet under No. 17 the correct number from Column B which matches the small letter in Column A.

Column A	Column B
a. Secretary of the Treasury	1. Is in charge of department which deals with internal affairs.
b. Secretary of Labor	2. Is in charge of department which deals with the welfare of workers.
c. Ambassador	3. Represents our government in a foreign capital.
d. Secretary of National Defense	4. Is leader of the majority party in the House of Commons.
e. Secretary of the Interior	5. Is head of department which deals with financial affairs.
	6. Is responsible for the conduct of military affairs in our government.
	7. Is in charge of the department of Justice.

Part III Problems involving application and reasoning

18. In the recent hearings before a Senate Committee the question was presented by some people as to whether or not the President could punish a Senator for what some people would consider incorrect behavior in carrying out his Senatorial duties.

Directions: From the list below choose the one method in which a Senator could be punished for incorrect behavior as a Senator, and blacken in on your answer sheet under No. 18 the correct number.

1. The President should have the Senator arrested and tried before a Federal Court.
2. The Senate should debate his conduct and vote to approve or disapprove his conduct.
3. The House of Representatives should also debate and vote on the Senator's conduct.
4. The Supreme Court should try the Senator and if they find him guilty of conduct unbecoming a Senator, expel him from the Senate.

19. It frequently happens that textbooks in history disagree on essential facts. In studying the Constitution you and other members of the class notice that two textbooks do not agree as to certain powers granted to Congress under the elastic clause, (Article I, Section 8, paragraph 18). "To make all laws which shall be necessary and proper for the carrying into execution the foregoing powers, and all other powers vested by this Constitution in the government of the United States, or in any department or office thereof."

In order to make clear the meaning of the elastic clause as stated above, you are able to refer to the following sources of information.

1. The Constitution of the United States.
2. Another textbook.
3. A series of Supreme Court decisions dealing with the powers granted to Congress.
4. The answer given in a majority of the textbooks which you have reference to.
5. Local newspapers.
6. Time magazine.

Directions: In your answer sheet under No. 19 blacken in the number of the one which you think represents the best source.

20. Congress, acting under the powers in the elastic clause of the Constitution, (Article I, Section 8, paragraph 18), "To make all laws which shall be necessary and proper for the carrying into execution the foregoing powers, and all other powers vested by this Constitution in the government of the United States, or in any department or office thereof, "passed in 1894 an Income Tax Law. This law was declared unconstitutional by the Supreme Court two years later. At that time the Supreme Court stated that Congress had exceeded its powers under the elastic clause.

You and other members of the class wish to learn the reasons why the Supreme Court declared the Income Tax Law of 1894 to be unconstitutional.

Directions: Below are several possible sources which you and your classmates might use in looking for the answer. In your answer sheet under No. 20 blacken the source which you think the best authority.

1. Encyclopedias.
2. Debates on the laws as contained in the Congressional Record.
3. Statements contained in other textbooks.
4. References to the Constitution of the United States.
5. Copy of the Supreme Court's decision regarding the law.

21. 1. A bill to raise several hundred million dollars to aid the nation in building schools originates in the Senate.
2. A similar bill originates in the House of Representatives and is passed after long debate.
3. The President receives an appropriation bill passed by both Houses of Congress. This bill does not meet with his approval so he vetoes and returns the bill to Congress with his reasons for vetoing.
4. A bill is passed over the President's veto by a majority of both Houses of Congress.

Directions: Read carefully the above four statements concerning the progress of any bill toward becoming a law. In your answer sheet under No. 21 blacken in the number or numbers of any of the four statements which do not agree with the lawmaking procedure as outlined in the Constitution.

22. Impeachment proceedings are being carried on against the President of the United States. The Constitution states the manner in which impeachment shall be carried out. From the following five items listed below, select the three items which have to do with the impeachment of a President. Blacken in the correct letters in your answer sheet under No. 22.

A. The Senate sits as a court and decides the innocence or guilt of the President.
B. At least three-fourths of the State Legislatures must vote to find the President guilty in order to have him removed from office.
C. The Chief Justice of the Supreme Court presides over the Senate during the trial.
D. The House of Representatives brings charges of impeachment against the President.
E. The Governors of the States must be consulted before the President can be impeached.

22. Part II. On the basis of the choices you made in Part I, you are now to decide the order in which impeachment steps would have to be taken in impeaching a President. In your answer sheet under No. 22 Part II, write the figures 1, 2, etc.; under the letters A, B, C, D, and E.

23. In 1919 President Wilson went to France to take part in the making of the Treaty of Versailles, ending World War I. The President, a Democrat, failed to include among the United States delegates any member of the Republican party. When the President returned to this country with the Treaty, he sent it to the Senate where according to the Constitution a Treaty must be ratified by at least a two-thirds vote of the Senate. After a long debate the Treaty was defeated. This was a great disappointment to President Wilson as the Treaty also provided for the establishment of a League of Nations which the President believed would promote world peace.

Directions: Below is a list of five statements. Blacken in on your answer sheet under No. 23 the number of any statement which you think is true about the ratification of Treaties.

1. The Treaty of Versaille could not have been completed without the President's personal attendance at the Peace Conference.

2. The Treaty would still have been binding on the United States if the House of Representatives had voted to accept it.

3. President Wilson could have refused to accept the Senate's vote in this matter and appealed to the Supreme Court to over-rule the Senate.
4. The defeat of the Treaty by the Senate prevented President Wilson from carrying out the terms of the Treaty even though he had signed it.
5. The fact that the President of the United States placed his signature on the Treaty before he left the Peace Conference meant that the United States should accept the Treaty as binding.

24. Read the following paragraph. It consists of a series of general statements which you may accept as true.

"The makers of the Constitution were determined to establish a government in which equal rights would be given to all. They decided that our National Government should consist of three separate branches. Each branch would act as a check on the powers of the other two branches. Because many of the delegates were afraid to grant too much power to the people, only members of the House of Representatives were to be chosen by the voters. The Two Senators from each State were to be chosen by the State Legislatures. In order to satisfy the delegates coming from various parts of the country and representing different views on many questions such as slavery, it was necessary to agree to several compromises."

Directions: Below is a list of general statements. Blacken in on your answer sheet under No. 24 the numbers of any of the statements which you think support the statements in the above paragraph.

General Statements:

1. The delegates to the Constitutional Convention believed in a limited form of democracy.
2. The branch of the National Government which could be considered most democratic was the House of Representatives.
3. Before adjourning, the delegates in the Constitutional Convention were unanimous in agreeing on all issues.
4. The final draft of the Constitution brought out many differences of opinion on a number of important questions.

25. The construction of a good system of national highways is one of the major problems which concern us today. A well-built network of roads is part of a nation's defense and security. Many plans have been suggested for improving our highways. In 1955, such a bill was presented to Congress with the approval and support of the President. The measure, however, was defeated after long debate. To some people this might seem that our system of checks and balances presents serious faults which ought to be corrected in order that the President can get things done which he believes are necessary to the country's progress.

Directions: Below are several statements which the President might consider taking to help his road bill. In your answer sheet under No. 25 blacken in the space after the number or numbers of the following statements which you think the President might take under his Constitutional rights.

Possible Courses of Action:

1. After the defeat of his road bill in Congress, the President should have declared a national emergency and carried out his plan for building roads even without consent of Congress.

2. The President should accept the decision of Congress as final and offer a new road bill at the next session of Congress.

3. The President should have appealed to the Supreme Court to declare that Congress had acted unconstitutionally in refusing to pass his road bill.

4. The President should have sent Congress home and called for the election of a new Congress.

5. The President should seek an amendment to the Constitution which would not require the consent of Congress in passing laws.

6. The President should take the highway question to the people and ask the voters to make known their views on this question to their Representatives and Senators in Congress.

26. The experience gained in living under a system of checks and balances since 1789 has proved the good judgment of those who made our Constitution. Even in times of war or other emergencies when more power is granted to the Executive branch, the rights and privileges of the Legislative and Judicial branches are respected. The enlarged powers

granted to the President have been given up after the emergency has passed. In this way, our nation has never come under the rule of a dictator or small ruling class. Despite the increase in population and territory, the United States has been able to meet new problems without making major changes in the basic structure of our government.

Directions: Below are ten statements concerning the paragraph you have just read. On the basis of information given in the above paragraph, and on your knowledge of the system of checks and balances, you are to decide which statements are True or False by writing in your answer sheet under No. 26 the Letter T if you think the statement is true; F if If you think that the statement is false. If you think that the information in the above paragraph is insufficient to answer any statement as True or False, you may make that statement O in your answer sheet.

General Statements:

1. The system of checks and balances has worked out even better than the makers of the Constitution expected.
2. Most Americans would prefer to see the law-making power entirely in the hands of the President.
3. It is necessary and desirable even in a democracy to give the President more rather than less power in time of great danger.
4. If the American people had found the system of checks and balances unworkable they would have changed to some other system.
5. The Supreme Court in deciding the Constitutionality of laws has destroyed the system of checks and balances.
6. If the people had an opportunity to vote on the question of keeping our checks and balances, no doubt some voters would want to abolish them.
7. A strong President makes a system of checks and balances unnecessary in a democracy.
8. With the large growth of our nation in area and population our system of checks and balances are no longer needed.
9. Although it is sometimes necessary to give more power for a short time to one branch of the National government, this does not destroy the system of checks and balances.
10. There is little chance that the basic framework of our National government as it now exists will be changed in the near future.

27. A religious group asked permission to distribute its literature in the city of Waco, Texas. The permit was denied to them so they went ahead distributing their pamphlets without official approval. They were arrested and subsequently convicted in the local courts. The conviction was upheld by the Supreme Court of the State of Texas. The members of this group still believed that their arrest and conviction was unconstitutional and a violation of their rights.

As you understand the constitutional rights in our government of the people, what is the best course of action for this group to take and still be within their rights?

Directions: Select one of the choices given below which you think would be most appropriate for this group to follow, by fillin in the correct space in the answer sheet under No. 27.

Possible Courses of Action:

A. Accept the decision of the Supreme Court of the State of Texas as final.
B. Continue to disobey the law and face continued arrest in the hope of winning public support for their cause which might force the authorities of Waco, Texas to grant them a permit.
C. Appeal to the Federal Courts on the basis that their rights had been violated under the Texas Constitution.
D. Appeal to the Federal Courts on the grounds that their rights had been denied them under the United States Constitution.

Directions: From the choices listed below select the reason you used for the choice you marked at the top. Blacken in on your answer sheet under reasons in No. 27.

Reasons for above choice:

1. No group of loyal citizens should ever disobey a law even if they think the law is a bad one.
2. Openly disobeying a law by a religious group is not against sound practices of religion if the group believes that their rights are being withheld.
3. The Supreme Court of any State might not be concerned as to whether or not any of its local laws were contrary to the Constitution of the United States.
4. By breaking the laws of the local community, the members of this group were taking the only available means of bringing their case before the United States Supreme Court.

28. A bill has been passed by both Houses of Congress and has reached the President's desk. The President found some things in the bill acceptable to him; however, there is at least one amendment which Congress has added to the original bill, to which the President is strongly opposed.

Directions: Below you will find three possible courses of action which the President may decide to take. In your answer sheet under No. 28 blacken in the letter or letters of the courses of action which the President could take.

Possible Courses of Action:

A. Veto the bill and send it back to Congress with the request that Congress pass no bills which do not have the approval of the President first.
B. Sign the bill into law.
C. Allow the bill to remain on his desk for a period of ten days after which it will automatically become a law without his signature if Congress is still in session.

Directions: From the list of choices below mark in your answer sheet under No. 28, the reason or reasons for the course of action you marked above.

Reasons for the Above Choices:

1. Congress should be certain when it passes a bill that such a bill already meets with the President's approval.
2. The many good parts of a bill should not be lost because of some objectionable things it may contain.
3. There is no way in which a President can deal with a bill which he neither likes nor dislikes in total.
4. In order to get laws passed by Congress which he believes good for the country, the President often finds that he must accept amendments which he dislikes.
5. The veto power which the Constitution gives the President places too much authority in the hands of the Chief Executive.

29. The United States Senate has appointed a special committee to investigate various parts of our foreign policy. The committee at its hearings decides to call as witnesses the Secretary of State and some of his assistants. During the hearings the Senate committee demanded certain official letters concerning the matter. The President refused to allow the letters to be taken from the State department files and given to the Senate committee, because he wanted their contents to be kept secret.

Directions: Below are listed four possible courses of action which the Senate committee might take. Blacken in on your answer sheet under No. 29 the number or numbers of any statements which you think the Senate committee could legally take.

Possible Courses of Action:

A. The Senate committee should hold the witnesses to be in contempt of the committee for refusing to cooperate and have them brought to trial in the Federal Courts.
B. The Senate committee should ask the House of Representatives to impeach the President for his refusal to furnish information asked for the committee.
C. The Senate committee should recognize the fact that the President is within his rights under the Constitution, and may as head of the Executive branch decide the actions of those under him.
D. The Senate committee could appeal to the Attorney-General to overrule the President and force him to comply with the committee's request.

Directions: Choose from the statements listed below the reason or reasons for the course of action you marked above. Blacken in on your answer sheet under No. 29 the number or numbers you chose.

Reason for above Choice or Choices:

1. No person in the employ of the government has any right to withhold any information asked for by a committee of Congress.
2. In matters concerning the Executive branch, the President is not responsible to other departments of the National government.

3. The President as head of the Executive branch is within his Constitutional rights in keeping secret any information involving his department, if he feels it is not in the best interest of the country to release such information.
4. Impeachment of the President might serve as a lesson to future Presidents not to refuse official information to committees of Congress.

30. In the early days of the New Deal, President Roosevelt was unhappy with the Supreme Court because the Court had declared several of the New Deal laws passed by Congress and signed by him to be unconstitutional. President Roosevelt called the Judges "nine old men." It was true that several of the Justices were over seventy years of age. The President felt that they did not understand the changes which were taking place in our nation at that time. He believed that the Supreme Court needed some younger judges on the bench.

Directions: Below are listed four courses of action which both Congress and the President might take to check the power of the Supreme Court. Blacken in on your answer sheet under No. 30 the letter or letters of any course of action which could be taken under the Constitution.

Possible Courses of Action:

A. Congress at the request of the President could overrule a decision of the Supreme Court.
B. The President might appeal to the voters in the hope that public opinion would cause the Supreme Court to re-consider the cases.
C. Congress under its powers may increase the number of Justices on the Supreme Court. This would allow the President to appoint younger men to the Court, who favored his ideas.
D. The President could by authority granted him by the Constitution demand that the Supreme Court review the cases and declare them Constitutional.

Directions: Blacken in on your answer sheet under No. 30 the reason or reasons you used for the above course of action.

Possible Reason for Above Choices:

1. The Congress is the final authority concerning the Constitutionality of laws.
2. An appeal to the voters might be the surest way to get the Supreme Court to change its mind.
3. By adding to the number of Justices on the Supreme Court, both the President and Congress might succeed in getting the larger Court to approve the New Deal laws.
4. The terms of the Supreme Court Judges should end with the term of each President, so that each new President would have the right to appoint all new Justices when he took office.

APPENDIX B

TABLE 15. A COMPARISON OF THE TEST-RE-TEST SCORES OBTAINED BY THE SAME 112 PUPILS.

Pupil	Test	Re-test	Difference
(1)	(2)	(3)	(4)
1	38	40	2
2	54	54	0
3	31	37	6
4	42	48	6
5	51	48	3
6	28	28	1
7	50	51	1
8	50	49	1
9	36	39	3
10	28	27	1
11	36	36	0
12	36	42	6
13	45	44	1
14	49	51	2
15	41	54	13
16	43	42	1
17	50	50	0
18	47	47	0
19	24	29	5
20	36	34	2
21	51	51	0
22	38	41	3
23	43	42	1
24	39	40	1
25	35	39	4
26	42	46	4
27	55	53	2
28	27	27	0
29	29	40	11
30	56	60	4
31	55	54	1
32	23	35	12
33	38	43	5
34	32	32	0
35	45	45	0

TABLE 15 - (Continued)

Pupil	Test	Re-test	Difference
(1)	(2)	(3)	(4)
36	45	45	0
37	38	39	1
38	51	53	2
39	32	33	1
40	44	53	11
41	38	41	3
42	25	45	20
43	24	27	3
44	49	50	1
45	27	40	13
46	48	58	10
47	48	50	2
48	50	50	0
49	43	45	2
50	46	49	3
51	33	36	3
52	52	52	0
53	52	50	2
54	30	44	14
55	55	54	1
56	31	31	0
57	19	22	3
58	28	37	9
59	43	43	0
60	27	27	0
61	31	33	2
62	48	48	0
63	43	49	6
64	37	38	1
65	39	40	1
66	48	46	2
67	37	35	2
68	36	32	4
69	43	44	1
70	30	28	2

TABLE 15 - (Continued)

Pupil	Test	Re-test	Difference
(1)	(2)	(3)	(4)
71	48	44	4
72	37	35	2
73	25	28	3
74	36	36	0
75	30	27	3
76	52	52	0
77	27	27	0
78	40	42	2
79	53	45	8
80	33	35	2
81	40	39	1
82	27	25	2
83	34	37	3
84	44	44	0
85	21	25	4
86	37	40	3
87	38	39	1
88	22	21	1
89	39	39	0
90	45	48	4
91	45	46	1
92	19	22	3
93	45	45	0
94	38	38	0
95	42	42	0
96	33	36	3
97	35	37	2
98	41	41	0
99	45	41	4
100	40	41	1
101	46	46	0
102	27	30	3
103	42	43	1
104	50	50	0
105	44	46	2

TABLE 15 - (Continued)

Pupil	Test	Re-test	Difference
(1)	(2)	(3)	(4)
106	39	42	3
107	56	60	4
108	52	52	0
109	46	49	3
110	54	58	4
111	38	40	2
112	28	28	0

APPENDIX C

Suggestions to Teachers Cooperating in the Study of Checks and Balances

In each junior high school there will be nine classes which will participate in the study, consisting of three sevenths, three eighths, and three ninths. The classes involved may be designated as 7a, b, and c; 8a, b, and c; and 9a, b, and c. Grades 7a, 8a, and 9a will be classified as control groups, while 7b and c; 8b and c; and 9b and c will be designated as experimental groups. The control groups (7a, 8a, 9a) will be given the pre-test and post-test but will receive no instruction whatever on the subject of checks and balances. The experimental groups '7b and c; 8b and c; and 9b and c) will be given the pre-test followed by three class periods of instruction on the subject of checks and balances, and the post-test. It is suggested that the pre-test be given to all students taking part in the study on two successive days, the first day to cover Parts I and II consisting of the multiple choice and matching type question 1-17. The second day will be devoted to Part III including questions 18-30 which involve application of the principle of checks and balances and ability to reason.

Following administration of the pre-test the experimental groups only (7b and c; 8b and c; 9b and c) will be given three demonstration teaching lessons concerning checks and balances. It is further suggested that all teachers involved use the methods and procedures which they would regularly employ in presenting this material to their classes.

On the fifth day following the third teaching demonstration both control and experimental groups will be re-tested in the identical manner prescribed for the pre-testing.

APPENDIX D

TABLE 16. GENERAL PURPOSE TABLE SHOWING DATA ON THE TOTAL SAMPLE: CONTROL GROUPS NOS. 1-268, EXPERIMENTAL GROUPS NOS. 269-786

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
1	12-5	116	29	32	36	13-6	130	41	42
2	13-1	115	37	37	37	14-0	110	39	39
3	12-5	116	46	48	38	12-4	120	41	43
4	12-0	128	33	34	39	13-0	114	43	43
5	12-10	129	29	27	40	13-4	137	44	44
6	12-10	117	32	31	41	13-4	126	37	38
7	12-2	137	36	34	42	13-6	123	43	45
8	12-7	128	41	43	43	13-6	100	35	30
9	12-5	134	48	38	44	13-0	128	42	36
10	12-1	117	29	26	45	13-8	108	36	43
11	12-0	143	41	42	46	13-5	117	39	42
12	12-1	119	27	30	47	13-4	120	38	41
13	12-7	117	34	36	48	13-9	111	41	40
14	13-2	116	36	33	49	13-0	115	40	37
15	12-8	092	34	33	50	13-10	124	44	39
16	12-1	130	33	33	51	13-11	115	41	43
17	12-6	117	24	29	52	13-5	121	38	39
18	12-5	107	22	23	53	13-0	120	40	51
19	12-3	119	13	17	54	13-6	120	40	40
20	12-2	101	23	22	55	13-8	130	46	40
21	12-11	117	28	32	56	13-11	100	19	24
22	12-3	119	13	17	57	13-4	108	29	30
23	11-0	103	32	31	58	13-1	122	41	43
24	12-9	107	31	30	59	13-0	115	35	34
25	12-6	124	26	36	60	13-6	102	34	35
26	14-2	093	33	32	61	14-11	110	22	18
27	12-7	122	31	33	62	14-1	117	32	34
28	12-8	116	28	28	63	14-1	120	56	58
29	12-5	126	32	29	64	14-10	97	27	29
30	12-4	106	25	32	65	14-9	87	33	34
31	12-5	107	26	26	66	14-5	140	46	39
32	12-2	124	27	28	67	14-3	118	42	42
33	12-2	118	35	36	68	14-7	99	29	31
34	13-4	104	37	38	69	14-3	114	30	31
35	13-5	128	38	40	70	13-11	118	36	34

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
71	14-9	84	27	24	106	12-6	102	20	25
72	13-11	140	43	43	107	12-0	105	28	30
73	15-8	105	39	39	108	13-0	105	28	21
74	13-10	112	30	34	109	12-6	90	30	21
75	13-11	108	31	30	110	12-6	100	20	17
76	14-2	118	33	25	111	13-1	107	10	18
77	14-9	114	44	35	112	13-1	89	23	19
78	14-6	105	40	37	113	12-5	98	26	20
79	14-4	109	37	24	114	12-12	95	14	23
80	14-3	115	38	38	115	13-6	110	28	30
81	14-1	116	29	35	116	11-10	110	17	20
82	14-9	119	36	39	117	12-10	94	30	20
83	14-9	79	30	33	118	12-5	94	17	19
84	14-2	101	17	25	119	12-1	105	17	17
85	15-7	115	53	56	120	14-8	94	22	27
86	14-7	128	42	41	121	15-4	85	12	16
87	14-3	115	30	30	122	13-1	107	16	24
88	15-0	95	42	26	123	13-8	103	28	22
89	14-7	124	32	35	124	13-9	99	14	14
90	13-11	85	32	24	125	14-1	107	26	34
91	13-1	94	28	22	126	13-5	103	26	23
92	12-3	98	19	27	127	12-9	108	17	21
93	12-0	98	21	28	128	14-4	104	24	26
94	12-10	105	19	18	129	12-11	114	29	27
95	12-8	104	27	29	130	13-5	100	24	28
96	12-7	95	15	17	131	13-2	105	22	19
97	12-10	102	28	28	132	11-11	110	16	15
98	12-7	100	24	21	133	13-11	83	24	21
99	13-0	98	19	20	134	13-6	108	33	23
100	11-10	98	24	23	135	13-9	100	21	21
101	12-0	95	30	16	136	14-9	103	17	28
102	12-9	111	18	16	137	14-2	93	29	28
103	12-2	95	20	28	138	13-0	109	24	33
104	11-11	109	22	19	139	13-2	114	28	35
105	12-11	115	31	26	140	13-8	95	29	25

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
141	12-11	101	18	32	176	12-11	104	18	14
142	13-11	96	30	29	177	11-9	90	5	8
143	13-1	103	22	26	178	12-2	104	14	18
144	14-0	95	32	26	179	12-6	123	15	20
145	13-2	104	27	27	180	12-5	121	16	18
146	13-5	108	26	23	181	12-3	80	8	9
147	13-2	112	33	39	182	12-0	112	20	29
148	14-0	100	25	23	183	12-4	128	21	21
149	13-7	108	15	23	184	12-11	96	12	11
150	14-0	84	26	12	185	13-2	102	10	15
151	14-9	93	29	29	186	11-11	110	21	25
152	14-6	105	24	25	187	12-4	129	3	6
153	13-8	96	21	23	188	13-8	80	5	8
154	13-4	110	30	30	189	12-6	125	19	21
155	12-0	110	19	21	190	13-8	94	24	20
156	13-2	95	9	8	191	13-8	94	24	20
157	12-4	120	20	18	192	13-8	87	22	22
158	12-4	114	21	21	193	14-0	101	16	16
159	12-5	115	21	23	194	13-5	113	32	35
160	12-0	104	17	19	195	13-4	102	26	23
161	12-4	112	28	23	196	13-4	89	13	23
162	12-0	102	15	20	197	13-3	117	42	28
163	12-6	110	29	14	198	13-5	107	33	36
164	11-11	117	24	31	199	12-1	77	21	22
165	11-10	115	23	22	200	13-3	100	22	35
166	12-9	105	10	6	201	13-3	109	33	33
167	12-9	103	14	28	202	13-0	115	37	37
168	12-3	97	9	10	203	13-6	120	26	33
169	11-9	112	27	34	204	13-5	107	27	22
170	11-11	124	18	19	205	13-6	107	28	28
171	12-3	119	27	35	206	12-10	115	29	29
172	12-6	112	9	10	207	13-4	115	27	26
173	12-2	123	14	14	208	13-5	105	34	27
174	12-2	103	17	21	209	13-2	110	36	36
175	12-10	88	12	11	210	13-8	120	28	32

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
211	13-4	101	25	27	246	14-0	116	36	32
212	12-1	79	21	21	247	14-2	108	31	28
213	13-2	110	36	36	248	14-6	106	34	33
214	13-5	114	32	34	249	14-10	105	36	32
215	13-7	86	22	23	250	14-3	119	44	48
216	13-8	93	24	22	251	13-11	110	37	44
217	13-0	115	37	39	252	15-0	110	35	35
218	12-4	80	25	26	253	13-11	116	45	39
219	13-0	100	33	35	254	14-6	111	29	36
220	14-9	101	34	36	255	14-2	108	26	29
221	14-8	111	39	36	256	14-10	116	39	48
222	14-1	121	40	35	257	13-9	107	32	32
223	14-3	118	40	39	258	14-4	105	43	42
224	14-3	105	34	40	259	14-7	117	43	44
225	14-3	104	39	37	260	14-1	117	37	36
226	14-7	121	41	42	261	14-3	115	29	31
227	14-1	112	34	38	262	14-0	101	35	24
228	14-2	100	31	39	263	14-7	105	24	21
229	14-9	88	24	28	264	14-5	108	35	40
230	14-2	106	26	39	265	13-11	114	27	28
231	14-0	115	37	41	266	14-5	98	40	38
232	14-6	110	37	37	267	13-11	117	42	44
233	14-8	112	38	40	268	14-6	108	34	32
234	14-7	116	41	42	269	14-3	115	29	31
235	14-10	109	35	31	270	14-6	111	29	36
236	13-10	125	47	51	271	13-4	110	37	44
237	14-1	115	36	37	272	14-0	117	44	52
238	14-6	113	34	34	273	14-5	124	34	45
239	13-8	113	34	31	274	14-1	132	46	59
240	13-11	110	23	26	275	14-5	129	31	45
241	14-0	112	20	20	276	13-12	122	34	41
242	14-6	112	36	36	277	14-7	116	33	50
243	13-11	98	28	29	278	13-10	118	52	62
244	14-2	106	30	48	279	14-5	124	45	53
245	14-1	121	38	38	280	14-8	118	43	50

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
281	14-3	136	39	32	316	14-6	135	42	57
282	13-8	119	41	54	317	14-4	142	53	64
283	14-6	111	34	61	318	14-1	108	33	58
284	14-6	114	36	45	319	14-4	132	44	52
285	13-10	115	31	39	320	14-12	121	43	57
286	14-1	125	43	43	321	13-8	118	43	60
287	13-10	134	42	57	322	14-8	124	32	50
288	14-0	124	40	49	323	14-3	118	42	61
289	14-5	115	46	53	324	14-4	108	47	58
290	14-1	127	51	57	325	13-9	127	35	51
291	14-10	123	40	57	326	14-3	118	34	45
292	14-4	127	34	58	327	14-5	116	37	57
293	14-4	123	49	55	328	14-7	115	33	48
294	14-3	118	38	53	329	14-5	130	27	50
295	13-10	106	37	43	330	14-4	117	44	57
296	14-5	119	44	56	331	14-5	110	39	62
297	14-7	115	35	48	332	14-5	111	41	55
298	14-5	127	52	59	333	14-6	115	35	46
299	14-1	127	42	52	334	14-10	104	32	53
300	14-8	110	41	49	335	13-7	113	23	41
301	14-4	118	35	50	336	14-0	137	24	58
302	14-4	113	41	57	337	13-9	123	28	49
303	13-10	112	36	52	338	14-6	138	46	53
304	14-3	124	33	55	339	14-4	121	37	49
305	14-6	119	48	57	340	13-11	143	41	47
306	13-11	116	27	43	341	12-11	138	50	55
307	15-7	127	35	38	342	14-7	109	34	37
308	13-10	119	35	53	343	13-11	124	27	39
309	14-1	118	35	55	344	14-7	107	11	21
310	14-4	117	44	55	345	14-7	104	32	40
311	13-11	123	25	51	346	14-6	97	34	47
312	14-4	111	18	46	347	14-6	112	35	37
313	14-6	118	37	53	348	16-11	121	37	45
314	14-11	132	48	57	349	14-6	108	35	35
315	13-10	119	35	50	350	15-1	122	40	44

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
351	14-6	109	33	46	386	13-8	122	38	47
352	14-11	109	34	34	387	13-1	93	20	41
353	14-0	112	29	29	388	13-0	100	29	38
354	14-7	123	32	53	389	13-10	106	23	31
355	14-7	117	19	29	390	13-7	113	39	47
356	13-11	138	39	58	391	13-10	115	36	47
357	14-1	127	34	54	392	13-2	121	29	32
358	14-0	111	39	42	393	13-1	110	27	29
359	14-7	132	50	59	394	13-3	106	23	37
360	14-2	145	53	66	395	13-7	111	31	38
361	13-11	116	28	42	396	13-4	107	26	38
362	14-7	97	19	38	397	13-0	74	19	26
363	14-9	121	31	58	398	13-6	111	33	40
364	14-5	99	35	55	399	13-3	107	30	35
365	13-6	98	18	12	400	13-4	113	21	36
366	12-0	115	32	45	401	11-11	101	21	23
367	13-7	101	21	32	402	12-11	111	20	24
368	12-10	122	32	40	403	13-1	119	38	40
369	13-4	107	22	33	404	12-9	107	28	36
370	13-1	124	37	45	405	13-0	79	9	13
371	13-5	117	33	42	406	13-1	114	22	20
372	13-3	105	29	13	407	13-9	108	31	34
373	13-9	95	18	28	408	12-8	113	32	35
374	13-1	117	31	36	409	14-0	97	19	21
375	14-0	95	19	15	410	13-1	98	23	38
376	12-11	106	31	20	411	13-4	113	21	36
377	12-10	89	23	19	412	13-7	105	41	55
378	13-10	113	27	22	413	13-2	122	35	41
379	14-0	92	14	30	414	13-10	114	46	49
380	13-6	115	36	37	415	13-3	115	28	34
381	13-10	105	27	35	416	13-6	119	30	32
382	13-7	115	35	38	417	13-4	120	35	47
383	13-7	120	36	48	418	13-7	119	42	50
384	13-6	115	33	39	419	13-10	113	39	45
385	13-6	117	27	33	420	13-6	119	38	42

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
421	13-0	105	35	44	456	13-11	72	24	28
422	13-10	103	28	37	457	13-11	103	24	24
423	13-7	120	41	54	458	14-0	108	25	35
424	12-10	139	50	58	459	14-11	94	29	28
425	13-3	103	41	43	460	14-3	73	17	27
426	12-11	128	39	50	461	13-3	100	11	25
427	13-2	118	28	49	462	14-0	98	26	23
428	13-1	118	33	37	463	13-8	104	19	35
429	13-1	112	35	41	464	13-11	102	26	23
430	13-2	120	42	54	465	14-5	88	13	20
431	14-1	106	31	50	466	13-1	115	25	37
432	13-8	127	47	56	467	13-5	70	16	11
433	13-10	117	36	40	468	13-11	86	27	29
434	13-8	120	40	54	469	13-6	103	28	30
435	13-3	116	37	48	470	14-0	97	25	26
436	13-4	105	34	43	471	12-3	111	44	56
437	12-11	122	36	48	472	12-6	120	38	44
438	13-3	115	46	49	473	11-0	108	26	22
439	13-11	97	30	26	474	12-5	122	28	38
440	12-11	105	32	29	475	12-6	114	34	41
441	13-10	95	20	28	476	12-2	102	40	36
442	13-9	92	15	28	477	12-0	123	45	52
443	13-6	110	32	35	478	12-3	120	38	49
444	13-11	86	18	12	479	12-6	130	35	46
445	13-7	88	11	17	480	12-1	120	38	46
446	14-4	89	30	28	481	12-8	121	32	38
447	14-10	82	16	30	482	12-10	126	47	51
448	14-4	79	25	31	483	12-8	127	35	44
449	13-3	91	7	15	484	12-4	115	32	37
450	13-5	92	16	16	485	12-7	111	34	34
451	15-6	85	18	25	486	12-10	122	44	47
452	14-10	81	23	10	487	12-6	107	36	35
453	12-11	99	24	24	488	12-9	127	33	38
454	13-0	112	18	29	489	12-4	144	48	57
455	13-2	114	26	36	490	12-10	109	40	45

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
491	12-5	111	28	30	526	12-4	142	47	50
492	12-9	128	45	43	527	12-9	106	15	15
493	12-5	122	39	43	528	12-10	108	32	38
494	12-6	112	35	42	529	12-5	114	26	33
495	12-1	131	37	44	530	12-2	108	16	9
496	12-3	119	32	40	531	12-0	98	11	11
497	12-1	125	32	39	532	11-9	108	43	48
498	12-2	120	32	37	533	12-6	115	35	43
499	12-7	119	24	30	534	12-10	116	36	44
500	11-0	113	31	39	535	12-6	118	18	25
501	12-10	108	27	37	536	11-11	125	34	45
502	12-5	120	35	42	537	12-4	103	20	17
503	12-7	96	20	30	538	12-9	107	31	41
504	12-3	114	32	31	539	11-11	115	31	32
505	12-8	109	27	33	540	12-0	116	22	40
506	12-8	122	26	34	541	13-9	91	22	22
507	11-0	107	30	39	542	12-3	114	30	22
508	10-10	123	34	41	543	12-9	104	10	13
509	12-4	109	36	32	544	12-9	115	40	42
510	12-2	105	26	34	545	13-5	69	10	9
511	12-0	119	36	40	546	13-3	106	16	20
512	12-0	128	32	45	547	12-5	94	25	36
513	12-2	123	35	47	548	12-6	114	22	21
514	12-3	115	35	23	549	12-6	95	28	19
515	12-0	117	32	30	550	12-5	116	25	31
516	11-8	143	35	42	551	12-4	118	37	46
517	12-2	110	23	35	552	11-11	112	38	39
518	12-8	100	35	39	553	12-1	100	18	13
519	12-7	123	31	46	554	11-11	109	36	45
520	11-0	125	36	37	555	12-3	100	25	24
521	12-4	140	35	53	556	11-9	147	45	51
522	12-1	140	34	49	557	12-5	118	23	24
523	12-9	124	34	45	558	12-9	128	47	55
524	11-1	110	31	39	559	13-11	80	9	12
525	11-6	121	33	35	560	11-11	126	38	44

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
561	12-1	110	34	40	596	13-1	110	32	43
562	12-0	103	44	50	597	13-2	127	35	48
563	12-1	113	35	50	598	13-0	75	19	26
564	12-3	122	33	34	599	13-2	124	32	40
565	11-0	101	32	34	600	13-10	106	23	31
566	13-2	102	25	23	601	13-3	107	30	35
567	11-11	101	10	19	602	13-10	106	23	31
568	12-8	127	38	43	603	13-0	100	29	38
569	11-11	104	15	16	604	12-3	120	36	37
570	12-5	118	26	39	605	12-7	117	34	48
571	11-11	116	26	27	606	12-6	109	22	23
572	12-3	125	36	45	607	11-11	104	27	35
573	12-0	114	20	27	608	12-5	124	33	51
574	11-8	138	42	45	609	12-3	118	49	60
575	12-8	118	20	24	610	12-4	124	24	32
576	12-3	112	11	14	611	12-3	119	27	34
577	12-10	111	30	28	612	12-4	117	35	26
578	12-0	107	17	30	613	12-6	126	34	48
579	12-7	96	12	16	614	12-7	108	41	53
580	12-3	116	22	44	615	11-11	124	33	39
581	12-0	119	37	38	616	12-0	119	32	38
582	13-7	91	22	24	617	12-0	121	38	41
583	12-0	119	25	44	618	12-4	123	38	47
584	12-3	106	42	47	619	12-7	117	28	40
585	12-0	117	22	38	620	12-0	118	32	41
586	12-3	114	20	36	621	12-4	126	30	42
587	12-6	118	16	33	622	12-0	117	25	34
588	11-0	116	18	25	623	12-1	110	31	42
589	12-2	114	18	19	624	12-4	118	33	44
590	12-5	109	21	25	625	12-4	116	23	29
591	12-0	115	27	27	626	12-6	112	31	41
592	12-5	131	37	50	627	11-10	110	24	27
593	13-1	131	30	47	628	12-3	104	33	36
594	12-3	120	39	36	629	11-11	118	27	37
595	12-5	106	37	33	630	12-11	114	28	33

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
631	12-12	118	36	41	666	13-9	97	26	28
632	12-4	131	36	44	667	12-3	107	29	34
633	12-0	132	33	41	668	12-3	112	36	38
634	12-10	113	27	34	669	12-0	110	35	34
635	12-6	106	23	27	670	12-4	124	32	27
636	12-9	94	26	29	671	12-7	118	44	50
637	12-2	111	24	30	672	13-0	110	22	31
638	12-4	109	39	35	673	13-11	103	28	37
639	11-11	109	26	14	674	12-11	103	26	40
640	11-9	122	36	38	675	13-7	106	25	34
641	13-10	98	28	26	676	14-4	104	26	32
642	11-10	110	26	31	677	14-3	103	25	30
643	12-7	102	19	35	678	13-3	108	19	29
644	13-9	103	23	18	679	13-6	106	27	35
645	12-2	109	32	34	680	13-5	98	22	26
646	12-2	110	19	22	681	13-2	106	19	25
647	11-10	113	21	25	682	14-8	88	27	35
648	12-0	106	25	31	683	13-2	114	32	41
649	12-0	110	24	31	684	13-7	108	19	28
650	12-10	109	25	31	685	13-5	104	19	24
651	12-1	104	24	30	686	13-6	109	31	42
652	12-1	110	27	16	687	13-4	100	36	32
653	11-0	116	27	24	688	13-8	104	34	42
654	12-3	106	29	36	689	15-7	83	16	21
655	11-10	106	29	22	690	12-0	110	28	34
656	12-6	107	29	25	691	13-3	107	34	53
657	12-7	116	33	42	692	12-11	110	29	37
658	12-9	110	15	16	693	14-2	86	17	24
659	12-0	110	22	19	694	13-6	100	22	25
660	12-0	110	24	26	695	14-1	103	18	25
661	12-7	92	25	34	696	13-1	109	31	43
662	12-5	121	25	29	697	13-2	110	26	31
663	11-10	105	28	33	698	13-2	101	29	34
664	12-2	108	29	34	699	13-8	97	24	30
665	11-10	111	34	40	700	12-11	103	27	35

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
701	13-6	131	38	58	736	14-6	108	35	57
702	13-5	124	32	46	737	14-10	100	20	46
703	13-8	113	38	51	738	13-0	93	11	27
704	13-2	117	35	53	739	15-9	86	25	38
705	13-10	122	33	48	740	14-6	102	23	32
706	13-5	129	35	52	741	14-9	105	22	44
707	12-6	122	38	51	742	15-3	105	30	40
708	13-11	123	37	53	743	14-0	96	31	48
709	12-10	114	34	42	744	14-5	106	27	41
710	14-4	112	34	40	745	15-10	98	34	28
711	13-2	122	43	55	746	14-4	104	21	44
712	12-11	124	41	62	747	13-1	96	32	37
713	13-10	117	27	35	748	14-11	86	21	50
714	14-0	96	25	28	749	14-4	100	22	31
715	12-10	118	33	42	750	15-6	118	33	55
716	13-4	122	27	39	751	15-9	93	16	35
717	12-7	126	39	55	752	14-11	102	23	35
718	13-5	135	35	58	753	16-0	93	33	43
719	12-2	119	30	39	754	14-3	107	32	48
720	12-10	125	42	51	755	14-9	117	22	30
721	13-8	113	29	35	756	14-0	113	38	45
722	12-10	126	32	44	757	14-7	108	27	42
723	12-9	130	34	50	758	14-6	104	30	46
724	13-7	117	38	45	759	13-11	103	15	42
725	13-3	115	37	49	760	14-2	101	19	34
726	13-2	117	36	44	761	15-1	103	26	44
727	13-8	125	39	47	762	14-11	100	33	49
728	13-2	121	34	43	763	14-6	103	27	36
729	13-1	115	32	38	764	15-11	100	13	45
730	12-10	127	37	55	765	14-6	99	30	46
731	12-8	119	38	47	766	14-6	97	26	40
732	13-7	116	39	48	767	13-11	98	23	47
733	14-2	96	23	30	768	15-9	95	37	51
734	13-11	109	39	60	769	14-9	101	20	25
735	15-1	105	25	53	770	14-4	105	32	51

TABLE 16 - (Continued)

Pupil	CA	IQ	Pre-test	Post-test	Pupil	CA	IQ	Pre-test	Post-test
(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
771	14-11	103	19	38	781	14-1	112	35	51
772	14-10	88	35	41	782	14-11	107	39	49
773	15-5	97	26	45	783	14-5	115	32	48
774	14-7	108	31	37	784	14-3	109	26	39
775	14-5	99	33	42	785	16-0	108	25	36
776	14-2	109	35	48	786	14-7	93	27	43
777	14-3	105	28	37					
778	14-7	112	42	49					
779	14-5	100	15	23					
780	15-1	93	24	34					