

IMPLICATIONS OF THE SIX-FOUR-FOUR PLAN
FOR THE DEVELOPMENT OF
INDUSTRIAL ARTS AND VOCATIONAL EDUCATION

by

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A THESIS

submitted to

OREGON STATE COLLEGE

in partial fulfillment of
the requirements for the
degree of

MASTER OF SCIENCE

July 1947

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ACKNOWLEDGMENTS

Sincere appreciation is expressed to Mr. George B. Cox, Head of the Department of Industrial Arts, for his invaluable counselling during this entire study; to Dr. Riley J. Clinton, Professor of Education, for helpful suggestions given during the formative stages of the paper; to the instructors and administrators who gave generously of their time and thought; to my wife, Virginia, for her constant inspiration and assistance; and to all others who have given of their time to make this study possible.

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THE IMPLICATIONS OF THE SIX-FOUR-FOUR PLAN
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CHAPTER I

INTRODUCTION

Purposes of the Study

To determine the extent and growth of the 6-4-4 plan of educational organization in the United States.

To discover how industrial arts and vocational education are affected by the adoption of the 6-4-4 plan.

Statement of the Problem

The potentialities of the 6-4-4 plan occurred to the writer while teaching Metalwork in a four-year junior high school. Here was a program which offered time for sufficient orientation in the junior high school and, in addition, two extra years for specialization in the four-year junior college. Surely a plan of educational organization with those provisions must be worth investigating.

Preliminary survey of the literature revealed a favorable attitude toward the plan on the part of national educational bodies who have regarded it as the most effective organization for secondary schools. It was

considered significant to determine the factors which have contributed most to the adoption of the plan, and any possible obstacles to its adoption. It is desirable also to determine the trend toward extension of the 6-4-4 plan and the advantages or disadvantages as they apply to the industrial-arts and vocational-education program.

Method of the Study

Names and addresses of about 35 schools operating on the 6-4-4 plan were secured from the various state departments of education. Information about schools planning to adopt the plan was also requested. Questionnaires were sent to 42 administrators and supervisors and to 114 industrial-arts and vocational instructors about March 1, 1947. Twenty-five administrators, or about 60 per cent returned the questionnaires. Thirty-two, or about 28 per cent of the instructors replied. This low percentage may be evidence of a lack of interest in this type of educational organization, or of a lack of information about it. Copies of the questionnaires are included in the Appendix.

A survey of literature on the subject provides a background for the inquiry. The amount of written material available is extremely limited.

Definition of Terms

Terminology for the upper two levels of the 6-4-4 plan is not fully agreed upon. Cox speaks of the lower secondary level and the upper secondary level (5:41).^{*} Tuttle refers to "eight years of secondary training divided (equally) between what will undoubtedly be called the high school and the college." (42:263) Farner claims the terms high school and college are accepted in his system (14:83). The 44th yearbook of the National Society for the Study of Education says of the lower secondary (grades 7-10), "It may be called the high school," and the upper unit "may be called the junior college" (28:97). When used to describe the junior college the term junior is inadequate according to Lindsay. He says some districts have substituted city for junior, but "There's still a need for an adequate word." (27:177) Education for All American Youth (10:353) assigns the term community institute to grades 13 and 14 in order to avoid conflict. Koos (26:397) refers to the Four-year Junior High School in a recent article. Thaden (40:45) predicts "The rise of 11 to 14 grade free public senior high schools...."

* Number 5 refers to item #5 of the bibliography. Number 41 is the page of the reference.

Type I Junior College: A junior college which operates on the college level only -- two-year type.

Type II Junior College: One which combines collegiate instruction with one or more secondary levels.

K-6-4-4 Plan: The regular 6-4-4 plan consisting of six years of elementary school, a four-year lower secondary level, and a four-year upper secondary level plus a year of kindergarten preceding the elementary school.

External Organization: Refers to the grouping of the grade levels within a school system. Some examples are 6-6, 6-3-3, 6-2-4, 5-3-4, and 6-4-4. There are now approximately 29 different types of organization in the United States (37:227).

Terminal Education: Designates the completion of formal, full-time education in the schools prior to entrance into remunerative employment and home and community life (11:258).

Reorganization: Any deviation from the traditional 8-4 division is honored with the name reorganization.

Associated School: The junior college cooperating in varying degrees with the high school in the use of buildings, facilities, and personnel. The degrees of association used in this study are: highly associated, moderately associated, and independent or separate.

CHAPTER II

ORIGIN AND DEVELOPMENT OF THE 6-4-4 PLAN

The idea of the 6-4-4 plan was proposed in 1908 by Dr. George A. Merrill, Director of the Lich-Wilmerding School of Industrial Arts in San Francisco, according to John A. Sexson, Superintendent of Schools, Pasadena, California (21:2). Douglass and Lindsay (8:3) claim that one of the most authoritative pronouncements occurred in 1913 as a result of a study of high school and college organization. At that time a committee of the National Education Association recommended what was essentially the 6-4-4 plan, but the recommendation received little attention. In 1915 the plan was endorsed by the North Central Association of Colleges and Secondary Schools, and in 1938 by the Educational Policies Commission of the National Education Association and the American Association of School Administrators (21:4).

In 1916 post graduate work was authorized in the high schools of California, and in 1921 the basic law was passed establishing junior colleges as a part of the public school system (8:4). Junior colleges were legally designated as secondary schools and were to be operated by governing boards whose authority was to be the same as the authority of governing boards of high school

districts. The 1921 law and legislation which has since been passed govern the organization of junior colleges in California.

According to the School Code and the rules and regulations of the State Board of Education, public education is available to all through grade fourteen. Compulsory student fees were abolished by a recent Attorney General's opinion, making instruction entirely free, with the exception of textbooks, which must be supplied by the students.

The first school system in the United States to adopt the 6-4-4 plan was in Pasadena, California (21:6). Conversion was started in 1924 and completed in 1928. It was endorsed for the school system by Dr. Frank W. Hart and Dr. L. H. Peterson, Professors of Education, University of California at Berkeley; President James M. Wood of Stephens College, Columbia, Missouri; Dr. Leonard V. Koos, Professor of Secondary Education, University of Chicago; Dr. E. P. Cubberly, Dean of the School of Education of Stanford University, and Dr. William Martin Proctor, Professor of Education at Stanford University (35:4).

Other California systems followed in the change to the 6-4-4 plan including Ventura, Compton, Pomona, Clearwater, Altadena, Lynwood, South Pasadena, Vallejo,

and Napa. Stockton started conversion in February of 1947 and will complete the change when several new buildings and additions are finished (20:1). Napa is also planning additional construction.

A few school systems in other states have adopted the plan and many have become interested in it. Those already operating on the plan are Parsons and Pratt, Kansas; Jefferson City, Missouri; Bartlesville, Oklahoma, and Meridan, Mississippi (21:7). The system at Moberly, Missouri was set up for operation on the 6-4-4 plan but local conditions at the time of actual transition made it necessary to adjust the plan to a 7-3-4 basis. The last four years (grades 11-14) are organized as a separate unit as in the 6-4-4 plan. Great Bend, Kansas was comitted to adoption of the plan in 1941, but conversion was held up by priorities on materials for construction (21:7).

Price, St. George and Ephriam, Utah, and Reno and Sparks, Nevada were reported by their State Education Officers to be operating on the 6-4-4 plan. However, they are not listed in a recent publication by Koos (21:8) and may fit into the classification of those systems that have a four-year junior college; but regrouping has not occurred in the grades below "either because separate boards control the different levels or because, as in all

the private school situations, the lower grades are wanting."

Planning conversion to the 6-4-4 plan are school systems in Vancouver, Longview and Bremerton, Washington.¹ Considering the adopting of the plan are Centralia, Washington¹ and Rochester, Minnesota.²

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1. According to a letter from the State Superintendent of Public Instruction, July, 1946.
 2. Letter from R. W. Goddard, Dean of Rochester Junior College, October, 1946.

CHAPTER III

RECENT EMPHASIS ON THE 6-4-4 PLAN

In charting the "Functional Organization of the American School System" the National Society for the Study of Education includes the 6-4-4 plan as the proposed type of organization for the elementary and secondary levels of education (28:97). (See Appendix)

Koos (25:101) says:

The 6-4-4 plan is more effectively geared to the needs of present day society than the traditional American organization. ...it is evident that the new plan (6-4-4) is the most effective and the most economical means of bringing the full advantage of the high school and college to the community as public education. ...the new college aims to serve all youth of appropriate ages, inclusive of those who will continue in the universities and those who will terminate their formal schooling in these years.

Diederich (6:46) gives a boost for the 6-4-4 plan when he says, "Larger city school systems must adopt the 6-4-4 plan... The situation is made to order for them to do what they have long wanted to do anyway."

Douglass and Lindsay (8:4) claim:

In theory, the six-four-four plan has been advocated for several decades. One of the most authoritative pronouncements occurred in 1913 as a result of a study of high school and college organization. At that time a committee of the National Education Association recommended what was essentially the six-four-four plan, but the recommendation was accorded but scant attention.

Recently the six-four-four plan has received great emphasis, especially by national educational bodies who have regarded it as the most effective organization for secondary schools. This new emphasis is to some extent in response to the demand that young people be retained for a longer period in school. A contributory fact of importance is the average age of first employment, which is approximately two years later than it was a decade ago. From the standpoint of educational administration, it is urged that the four-year junior high school comprises a better unit for the purposes of general education, that it coincides with the compulsory attendance laws, and that grades eleven through fourteen permit a more effective educational organization. The break between grades twelve and thirteen is reduced, there is more economical use of the school plant and of the teaching personnel, and a more effective organization of vocational courses is possible.

An increasing number of institutions have in recent years been committed to the 6-4-4 organization. According to Goddard (15:184):

The arguments most commonly advanced for such an organization are economy of cost and time, better opportunity for continued guidance through the adolescent period, the more effective administration of a vocational program, and the better articulation of subject matter. ...also achieves a greater degree of democratization.

Preference for the 6-4-4 plan is disclosed in another study recently made by Koos. For this inquiry he interviewed a hundred administrators, including deans, superintendents, and high school principals in districts maintaining junior colleges. About three fifths of all

administrators interviewed preferred the 6-4-4 plan (22:215).

Johnson (17:606) predicts, "As the Public Junior College expands, we may expect an increasing percentage of four-year junior colleges..." He further points out that today only five per cent of our public junior colleges are of the four-year type, yet 59 per cent of the administrators, deans, and superintendents prefer the 6-4-4 plan.

The National Association of Secondary School Principals has assumed that grades 13 and 14 will be added to the secondary schools (33:17). However, no plan of instructional organization is suggested as such.

In a school opinion poll titled "Should Schools Expand Up and Down?" Nations Schools (38:30) lists the following results regarding the inclusion of the 13th and 14th grades:

Yes-----	59.0%
No-----	30.0%
Uncertain-----	10.2%
No answer-----	00.8%

The National Society for the Study of Education asks the question, "Should grades 13 and 14 be included in the secondary school?" In answering this question the Society observes that many states are making provisions for extending the secondary level to include grades 13 and 14. It suggests also that opinion is gaining that the

first two years of college are secondary in nature (28: 97).

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CHAPTER IV

THE NEED FOR GRADES 13 AND 14 IN SECONDARY EDUCATION

A study of the 6-4-4 plan in Pasadena, California took place during the school year 1931 and 1932 under the direction of Dr. Wm. Proctor, Professor of Stanford University, who acted as Director of Research studies (35: 11). Over 100 staff members took part in the study.

One of the main issues mentioned in this study was the purpose of adding grades 13 and 14 to the secondary schools. It was pointed out that the addition of these grades is necessary to any system of organization in order to satisfactorily complete the task of secondary education. The 6-4-4 plan recognizes that the 13th and 14th years are really secondary education -- if not they should not be attached to the public schools because tuition-free public education stops with the completion of the secondary school.

The inclusion of grades 13 and 14 in the school system of Pasadena was a step in the right direction judging by this statement from a recent publication by the Educational Policies Commission (10:351):

It is surely no exaggeration to suggest that the response to this increasingly understood need of a universally educated society will inevitably extend public secondary education upward on a scale not hitherto envisaged.

Thaden (40:45) stresses the need for the 13th and 14th years when he mentions that three-fourths of America's seven million high school pupils do not go on to college, and pointedly says that the secondary school, responsible for preparation of its pupils for an evolving democracy, is not adequately doing the job. He predicts the growth of the K-6-4-4 plan and the rise of the 11 to 14 grade free public senior high school to equal the rise of the 12 grade high school during the last 50 years.

An indication of the trend toward the expansion of the secondary system is seen in the actions of several state legislatures to meet the challenge set before them. The state of Washington has been concerned with the addition of a 13th year to schools where there is no junior college.¹ Building plans are under way in several places. The added year is to be mainly vocational in character. The Michigan Public Education Study Commission recommended the addition of grades 13 and 14 in a bill before the legislature in 1944. It was deferred for further study (40:45).

In Texas a 12-year plan was installed several years ago "until a community is ready for a fourteen-year plan (fifteen or sixteen with the nursery school)." Recommendations were made for a fourteen-year plan with some kind

1. Information given in a letter from the State Department of Education, July 1946.

of a degree at the end "...since most of the children are not going to college." (41:15)

Mr. Max W. Barrows, State Supervisor of High Schools in Vermont, says:^{1.}

It will be necessary for our State Laws to be amended authorizing public schools to extend the secondary schools to include grades 13 and 14. We anticipate the necessary legislation will be introduced in the next session of the Legislature. If and when this time comes, we will favor the 6-4-4 plan of school organization.

Several systems in Massachusetts are planning to add grades 13 and 14. These are located at Newton, Lynn, and Springfield.^{2.} In Oregon the possibility of extending the secondary school period to include grades 13 and 14 has been discussed by the State Department of Education, but as yet, no local system has definitely set up such a plan.^{3.}

A further stimulus to the extension of secondary education through grades 13 and 14 has been the increased enrollment of veterans of World War II. Bacon (2:27) surmises a considerable long-term increase in enrollment

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1. Information given in a letter from Mr. Barrows, July, 1946.
 2. According to a letter from A. Russell Mack, Supervisor of Secondary Education, July, 1946.
 3. Letter from D. A. Emerson, Assistant Superintendent of Instruction, July, 1946.

of youth aged 16 to 18 years. At present the increase is due to the enrollment of veterans who are too mature and whose needs are too specialized for high school, and those who have graduated from high school. Other causes for a sustained increase in enrollment are:

1. The increase in the birth rate of 1942 to the present.
2. The increased holding power of the schools.
3. Employment restrictions.¹

If it is true that the addition of grades 13 and 14 is needed to properly complete the task of secondary education, it may also be true that our present junior colleges -- two-year as well as four-year -- are at least in some measure secondary in character. Concerning this point Barnes (3:43) reports:

There is evidence that the junior college is becoming more closely affiliated with the public schools in the future -- a part of the public schools, regardless of type or organization.

The high percentage of junior college students who are engaged in terminal education and the comparatively

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1. Eells (11:258) says:

More and more our leading economists, educators, sociologists and industrialists have been assuring us that young men and young women in the future will not be absorbed into commercial and industrial life until they are 20 or 21 years of age.

few who are engaged in college training programs point significantly to the need for closer affiliation (12: 250).

CHAPTER V

SOME ADVANTAGES OF THE 6-4-4 PLAN

The Faculty

Douglass says that no one division of the public school system into units suits all localities. There should be freedom to develop 8-4, 6-3-3, 8-6, 6-6 or other types of horizontal organization involving not less than two nor more than four units (7:3). The important factor is the amount of integration between each of the various grade levels, and within the whole unit rather than the type of organization used. Findings by Koos showed that the associations -- high school and 2-year junior college highly integrated -- and the 4-year junior colleges -- are in a position more often than the organizations with separate junior colleges to work out programs meeting the needs of individual high school students. The systems that are "separate" discourage or actually prohibit such composite programs (23:399).

In a study concerning the feasibility of 6-4-4 reorganization in school systems with junior colleges, White (43:358) points out: "The extent of association between high school (grades 11 and 12) and the junior college (grades 13 and 14) is a matter of utmost importance..." He selected ten junior colleges in the

state of Iowa and arranged his inquiry to determine the extent of high school and junior college integration, and the prospect of further integration or of the establishment of the 6-4-4 plan. Upon classifying the selected schools he discovered that the degree of association ranged from complete independence of both to complete integration into one unit.

The degree of association was found to have considerable effect upon the excellence of the faculty instruction. The best prepared teachers were those who taught in only one department (in the associated schools). However, in order to make it possible for teachers to teach in only one department in a two-year junior college the enrollment must necessarily be about 650 to 700. This would exclude about three-fourths of all junior colleges in the United States and all of those in Iowa. White (43:358) concludes:

It is, therefore, unlikely that any Iowa junior college will be able to use an independent junior college faculty and secure the same level of academic training that follows the use of an associated faculty. It is clear that the associated faculty has the advantage.

It is also clear that a four-year junior college as a part of a six-four-four plan of organization should obtain a closely associated faculty. In fact Koos found that the proportion of instructors teaching in both high

school and junior college is greatest in the 6-4-4 upper level; second highest in the associations, with the "separates" limited to extremely few cases. This vertical distribution makes the horizontal spread smaller and as a result the quantity of preparation is greater. The quality of instruction in grades 11 and 12 of the 6-4-4 plan is superior because instructors must be prepared for grades 13 and 14 (23:399).

There is no distinction between teachers of grades 11 and 12 as compared to those of grades 13 and 14 with reference to teacher selection, assignments, supervision, etc. A single administration policy is assumed -- this is a saving in itself -- faculty meetings are all one group, with one salary schedule based upon training, experience, sex, etc., but not upon the grades (11 to 14) to be taught.

In another report Koos points out that "... the four-year (Junior High) school tends to bring...instructors with more extended preparation than does the three-year school..." (21:41)

Concerning the distribution by sex Koos found the percentage of men in the four-year junior high school to be 41.1 per cent and in the three-year school 37.4 per cent. This suggests a trend induced by the presence of grade 10.

Seventy-six out of 80 teachers preferred to teach in the four-year Junior High Schools in Pasadena as compared with the three-year schools before conversion to the 6-4-4 plan (35:53).

Housing and Facilities

White shows a marked superiority in the specialized facilities available for junior college use in the highly associated college and high school groups. Table I shows the average number of specialized facilities available (43:40).

TABLE I

The Average Number of Specialized Facilities Available for Highly Associated, Moderately Associated and Independent Schools

Specialized Facilities (Not Regular Classrooms)	Average Number Available		
	High Assn.	Mod. Assn.	Ind.
Gen. offices & conf. rooms	5.25	2.50	1.00
Specialized classrooms	8.00	3.25	1.50
Laboratories, shops, store-rooms, etc.	8.50	5.50	3.00
Phys. Educ. & Athletic Provision	6.50	5.50	4.50
Waiting rooms, teachers' offices, etc.	15.25	10.00	7.00
	43.50	26.75	17.00

In Table I the average number of laboratories, shops, and storage rooms available for the high association schools was 8.50, for the moderate association schools was 5.50 and for the independent group was 3.00. This comparison indicates a superiority which is feasible with the 6-4-4 plan. White judged that an independent junior college must have an enrollment of at least 1000 to enjoy housing facilities equal to those of the associated schools. Integration "...probably into the 6-4-4 plan," claims White, would greatly facilitate the junior colleges which are least integrated at present. The apparent reason for the superiority of the high association groups is the advantage of supporting one set of facilities rather than being forced to divide support between two sets. He concludes:

From the standpoint of the feasibility of integration, therefore, such integration would greatly increase the adequacy of the specialized facilities in the independent junior colleges and somewhat increase their adequacy in the moderate-association groups. An exceptional gain would be made in the specialized classroom and laboratory type of facilities.

Koos compared 17 four-year and 34 three-year junior high schools and found the number of industrial arts rooms in the four-year schools was 94 with an average of 5.5, and in the three-year schools was 178 with an average of 5.2 (21:42).

Economy in housing facilities frequently results from the adoption of the 6-4-4 plan. For example, the school system in Stockton, California, where conversion to this plan is in process, will reduce its plants from 28 to 24. Table II shows the distribution of housing under the old and new systems (20:2).

TABLE II

Chart Showing the Change in Housing Facilities
in Stockton, California Resulting
from Adoption of the 6-4-4 Plan

Number of Plants Used in the Old System		Number of Plants to be Used in 6-4-4 System	
Elementary schools	22	Elementary schools	18
High schools	3	High schools (grades 7-10)	4
Building with adult and vocational classes	1	Junior college (grades 11-14)	1
Junior college	1	with downtown branch	1
New elementary school (needed)	1		
Total	28	Total	24

Additions to the new high schools will be 47 rooms. Additions to the junior college will be 47 rooms, laboratories, and shops.

Thaden's opinion (40:45) is that the K-6-4-4 curriculum will affect the physical plant, but he does not indicate any great changes when he says:

Buildings will normally be one story structures. Some rooms...will be equipped with ample locker space for adult and evening classes as well as regular day time classes. In rural centers the 7 to 10 and 11 to 14 curriculums will probably continue in the same buildings; in cities there will be still greater plant specialization.

Viewing the housing needs which result from the addition of grades 13 and 14 to the field of secondary education Bacon (2:28) suggests a versatile type of structure of less permanent construction -- which he calls the 30-year type.

Administration and the 6-4-4 Plan

Preference for the 6-4-4 plan is disclosed in another study recently made by Koos (22:215). For this inquiry he interviewed a hundred administrators including deans, superintendents, and high school principals in districts maintaining junior colleges.

TABLE III

The Number and Per Cent of Administrative Officers in 54 Junior Colleges Preferring

	Number	Per Cent
1. Two-year junior college	27	26.2
2. Association	9	8.7
3. 6-4-4 Plan	61	59.2
4. Uncertain	6	5.8

Reports show that the more extensive concentration of responsibility in the same administrator for administration of the upper and lower secondary units results in more consistent administration. In a study of responsibility for administrative functions the associated four-grade system with one administrator showed one-twentieth of the possible areas for administrative conflict of that shown by two separate systems and two separate administrators (22:215).

The student-administrator ratio in the junior college contrasted with that in the local high school is more than a two to one advantage for the High Association group over the Independent group, with the Moderate Association group in between (22:215).

Several advantages in administration are suggested by Douglass and Lindsay (8:3) in their discussion of educational organization in California:

From the standpoint of educational administration, it is urged that the four-year junior high school comprises a better unit for the purposes of general education, that it coincides with the compulsory attendance laws, and that grades eleven through fourteen permit a more effective educational organization. The break between grades twelve and thirteen is reduced, there is more economical use of the school plant and of the teaching personnel, and a more effective organization of vocational courses is possible.

Other Advantages of the 6-4-4 Plan

The advantages of the 6-4-4 type of organization, particularly as it relates to the junior college unit, are listed as follows by Proctor (35:93):

Being secondary in character the thirteenth and fourteenth years should be closely articulated with the rest of the secondary system. The most efficient and economical articulation is the union of these two years with the eleventh and twelfth grades of the four-year high school, making a single four-year unit of junior college rank. (a) Practically all students in the eleventh grade and above are in the late adolescent, or upper adolescent period, thus giving social and psychological homogeneity to the student body; (b) with a proper orientation and adjustment program in the eleventh grade, the upper classes, including the twelfth grade, can be held to a standard of accomplishment in no way inferior to that maintained in the traditional freshman and sophomore years of college; (c) the junior college organized in accordance with the 6-4-4 plan requires one less school plant for the community than is the case when it is organized as an isolated two-year institution on a separate campus, under the 6-3-3-2 plan; (d) the junior college organized on the 6-4-4 plan results in a more integrated educational program and in a more unified and efficient administrative machinery than when it is organized as a separate two-year institution in a building of its own, or housed in the high school plant; (e) curriculums worked out over a continuous four-year period, beginning with the eleventh grade, more readily facilitate the elimination of duplication and overlapping in subject matter than when these curriculums are organized as two separate and distinct units; (f) terminal curriculums, in particular, when begun in the eleventh grade result in an earlier and more definite arrangement of

subject matter to meet the objectives sought, as well as a wiser selection of the liberal arts offerings, than can be possible when but two years are provided for the organization of these curriculums; (g) a diploma granted at the conclusion of a four-year course carries greater weight and dignity than one granted at the conclusion of a two-year course; (h) school traditions and school spirit are more easily developed and maintained in a four-year institution than in a two-year institution in which the school opens every fall with a majority of its students who have never been in the institution before; (i) a guidance program can be more easily organized and administered over a four-year period than over one or two years; (j) the four-year junior college gives, even in the smaller communities, a student body of adequate size for efficient student classification.

In a study of the physical maturity fourteen thousand cases in Ventura, Riverside, Menlo, and Pasadena were measured by Proctor. The results (35:151):

1. Chronological age was practically constant.
2. Height increment was greatest between the sixth and seventh grades.
3. Height increment was smallest from the eleventh through the fourteenth grades.
4. Weight increments were practically the same as the height increments.
5. Mental ages--the largest spread was between the sixth and seventh grades, and seemed to reach a plateau between the tenth and eleventh grades. The difference between the twelfth and thirteenth grades was very slight in mental age as well as in height, weight, etc.

The conclusion would follow from the above study that the divisions between the sixth and seventh grades and

between the tenth and eleventh grades of the 6-4-4 plan are properly placed, when viewed from the standpoint of physical maturity.

The superiority in the guidance program of the Highly Associated schools was indicated by (43:358):

1. A higher retention of students.
2. A larger success for those who changed their programs after the twelfth grade.
3. More success on the part of all students as shown by a comparison of average high school and junior college marks.
4. More economical and efficient student-advisor ratios.

These schools also offered a significantly higher average number of semester hours in the curriculum than did either of the other groups. Similarly, in the extra-curricular fields the association induced and made possible more activities at the junior college level.

The holding power of the four-year junior college was found by Koos (23:399) to be highest among the schools measured. The two measures of retention were: (1) The per cent of students retained into grade 14 and (2) the per cent of students distributed to terminal programs.

Concerning the cost of administration and supervision Koos (23:399) used a single measure: the ratio of the cost per student per year at the junior college level to that at the high school level.

TABLE IV

The Ratio of Cost Per Student Per Year
at the Junior College Level to that
at the High School Level

Type of School Situation	Ratio of Cost
Separate two-year junior colleges.....	2.5 to 1
Associations.....	2 to 1
Four-year junior college in the 6-4-4 system.....	1 to 1

The cost per average daily attendance in the Pasadena system in 1924-25 while operating on the 6-3-3-2 plan was \$205.28 per unit. After conversion to the 6-4-4 plan was completed in 1931-32 the cost was \$186.58 per unit (35:156). Another important aspect is the fact that students can live more economically at home.

Specific Advantages to Industrial Arts and Vocational Subjects

In a comparison of the practical arts programs in the Pasadena 6-4-4 Junior High school and the previous 6-3-3 Junior High school the committee found that in Home Economics and Shop courses it was much easier to complete the exploratory aspects of the practical and applied subjects in the new school. In industrial arts there was a marked increase in equipment: machine lathes, tool cutter

grinders, tenoners, shapers, and other items. Advanced pupils in grades below 10 may use this equipment. These pupils are stimulated to better achievement through seeing the better grade of work which is usually done by the 10th grade pupils in various shops (35:51).

The average number of industrial arts rooms available in the four-year junior high schools checked by Koos (26:397) was 5.5 compared to 5.2 rooms available in the three-year schools.

The average number of industrial arts courses offered in 17 four-year junior high schools studied by Koos was 6.29 compared to 4.34 offered in 34 three-year junior high schools. He continues (26:397):

From the extended offering in the 4-year schools, especially in such fields as the practical arts...one may infer a program affording enlarged opportunities for enrichment and exploration...

It seems that the four-year junior high school provides the time to do better that which is being reasonably well accomplished in the three-year program. With this broader background the learner may look forward to four years in the junior college in which to specialize in his chosen field.

There seems to be a determined effort on the part of educators associated with the junior college to revise its program to meet more adequately the life needs of all

its students, by offering a more complete program of basic vocational preparation for those who will not go on to college as well as college preparation for those who wish to go on to college. In the junior college organized in accordance with the 6-4-4 plan the more adequate facilities and the continuity of the program under one administration provide opportunities for a higher degree of specialization than either the high school or the two-year junior college. Proctor (35:93) emphasizes:

...terminal curricula, in particular, when begun in the eleventh grade result in an earlier and more definite arrangement of subject matter to meet objectives sought, as well as a wiser selection of the liberal arts offerings, than can be possible when but two years are provided for the organization of these curriculums.

A Summary of Advantages of the 6-4-4 Plan

The 103 administrators interviewed by Koos (21:21) gave the following reasons for liking or preferring the 6-4-4 plan:

Reason	Frequency of Mention
1. Encourages continuity (or vertical integration) of the curriculum	32
2. Stabilizes by achieving a longer program	17
3. Facilitates continuous guidance	20
4. Favors financial economy	17
5. Economizes through co-operative use of facilities	12
6. Encourages enrichment of the curriculum	16
7. Improves retention of students	16
8. Affords homogeneous grouping of students	16
9. Joins two levels of education (secondary) belonging together	9
10. Strengthens the program of student activities	8
11. Facilitates effective use of staff	4
12. Raises standards of work in Grades XI-XII	3
13. Accords with socio economic trends	2
14. Achieves an improved junior high school	2
15. Brings advantages of junior high school organization	1
16. Improves school organization below the college level	1
17. Reduces abruptness of change from high school to college	1
18. Simplifies school organization	1
19. Fosters development of a "community college"	1
20. Relieves a crowded housing situation	1
Total	179

CHAPTER VI

OBSTACLES TO THE ESTABLISHMENT OF THE 6-4-4 PLAN

Granted that the 6-4-4 plan is educationally desirable, organization on this basis has been and will be handicapped because of practices which have developed over a long period of years. In California Douglass and Lindsay (8:3) state that many of these practices have been incorporated in the School Code; in other instances vested interests have been established which will oppose a new form of organization. They explain the situation further:

It is in the areas served by the union high school districts that difficulties arise. The union high school is almost always organized as a four-year institution, with its area of financial support and administrative control composed of the amalgamation of from two to fifty elementary school districts. One of these districts has its own governing boards, which includes tax levies for current expenses and capital outlay. Rivalries often develop. While the law enables the establishment of junior high schools in areas served by union high schools, it is significant that few have been set up. If the union high school has sufficient resources to maintain a junior college it is legally possible to organize a six-four-four plan. Ventura and Compton are examples of six-four-four plans operated in union high school districts. These are to be regarded, however, as exceptions in organization.

California contains a large number of union high schools. As indicated above, they

usually include grades nine to twelve. Junior colleges existing as departments of high schools or as district junior colleges in these union districts are, with the two exceptions noted above, two-year institutions. Occasionally the junior colleges are housed in whole or in part with the high school; more frequently, however, the junior college has its own campus, which may be adjacent to the campus of the high school. It is a common arrangement to place one administrative officer in charge of both institutions, with assistant administrative officers in the high school and the junior college. High school and junior college students are separated in so far as practicable. This type of organization is the most popular in the union high school districts maintaining junior colleges.

Many of the junior high school districts possess neither the material resources nor the students to consider the establishment of a junior college. As conditions stand at present, a district of this type can become a part of a junior college district by annexation, or by joining with one or more other union high school districts to form a union junior college district. Movement toward the formation of larger school units through this process is all but imperceptible. Moreover, there are areas in California where, because of sparse population, great distances, and little wealth, the formation of junior college districts should not be encouraged.

It may be suggested that a state system of public education organized on the six-four-four plan should anticipate the establishment of conveniently located four-year units embracing grades eleven to fourteen, with a consequent elimination of the last two years from existing high schools. Four-year junior colleges could then be placed in such a manner as to serve the districts now served by the union high schools. Educationally, such a plan has merit; practically, it has much against it. Communities now supporting union high schools will not willingly relinquish the last two years, especially if in doing so they must

agree that another community is to be the location of the four-year junior college. Eight-year elementary schools oppose suggestions of this nature, as they do not relish the thought of losing grades seven and eight. The fact of the matter is that administrative machinery, school law, and the habits of thinking of pupils, parents, teachers, and administrators of the areas served by the union high school districts favor the retention of the eight-year elementary school, the four-year high school, and the two-year junior college. Legally, it is possible to set up the six-four-four organization in these districts, provided they have sufficient resources; actually, however, there has been but little progress. Progress will continue to be slow unless additional financial aid is given by the state as a reward for such reorganization.

Reference has been made to vested interests which will oppose change in the organization which now prevails. In addition to the opposition which will be shown by patrons, teachers, and especially administrators in eight-year elementary school organizations, it may be expected that the administrative head and the teachers of a four-year union high school will not be enthusiastic supporters of the proposed change. They will see in it the possibility that their own positions will become insecure and uncertain.

Similar opposition may be expected of certain junior college administrators, and of a large percentage of junior college teachers, but for different reasons. In the junior colleges the idea is strong that the institution is a collegiate one, and not a "glorified high school." The junior college should, according to this view, be separated from the high school. Although this attitude is due more to a desire for social and academic recognition than to an analysis of the functions of a junior college and the capabilities of its students, it is none the less strong.

In summary, it may be admitted that the six-four-four plan offers many advantages, particularly of an administrative nature. The school law of the state has been modified in such a way as to permit this form of organization. On the other hand, entrenched practices in the areas served by union high school districts may be depended upon to perpetuate the eight-year elementary school, the four-year high school, and, in the more populous and wealthy areas, the two-year junior college, unless some form of financial aid be provided by the state for those districts reorganizing upon the six-four-four basis. Even with such aid, the task of reorganization could be expected to consume a number of years.

This explanation seems adequate for the state of California. Most other states must add to the problems listed for California the problem of no financial support for secondary education beyond grade 12. It is obvious that a rapid and general spread of the 6-4-4 plan throughout the country is not likely in the immediate future, unless financial aid can be established for districts or states reorganizing on the plan.

A Summary of Obstacles to the Establishment of the 6-4-4 Plan

Koos (21:199) lists the obstacles to introducing the 6-4-4 plan as seen by administrators preferring it who are in systems not operating it:

Obstacle	Frequency of Mention
1. Present building or housing facilities unadapted	22
2. Community unfavorable or not ready	17
3. Administrative personnel unfavorable	4
4. Staff not ready	2
5. University Authorities discourage	3
6. Students prefer separate unit	1
7. Commitment to present organization too recent	4
8. Strong high school athletic tradition discourages	3
9. Strong tradition of graduation from high school discourages	1
10. District organization obstructs	6
11. Junior college under separate board	1
12. Tuition charge at junior college level interferes	3
13. Board opposed to having Grade X in junior high school	1
14. No junior high school in system	1
15. Junior college enrolment too small	1
Total	70

CHAPTER VII

THE SURVEY OF OPINION

With a survey of the literature on the 6-4-4 plan as a background, two questionnaires were designed -- one each for administrators and instructors in industrial arts and vocational subjects in schools operating on the plan -- to survey the opinions on some of the problems and benefits which result from adoption of this type of organization.¹

Opinions were requested concerning the names used and preferred for the upper and lower secondary levels, preference for the 6-4-4 plan, experience in other types of plans, the application and expansion of courses in industrial arts and vocational education, causative factors in the adoption of the 6-4-4 plan, and obstacles to its adoption.

Names for the Secondary Levels

Since the names for the upper two levels of the plan were extremely varied as found in the literature it seemed necessary to determine what terms are used by

1. Copies of the questionnaires may be found in the Appendix.

administrators and instructors in the schools operating on this plan.

Four questions concerning nomenclature were:

1. What name do you use for your lower secondary unit?
2. What name do you PREFER for this unit?
3. What name do you use for your upper secondary unit?
4. What name do you PREFER for this unit?

A compilation of the names used and names preferred by administrators and industrial arts and vocational instructors is given in Tables V and VI.

TABLE V

Names Used and Names Preferred by Industrial Arts
and Vocational Instructors for the
Upper and Lower Secondary Levels of the 6-4-4 Plan

Upper Secondary	Number That Use	Number That Prefer
Junior College	18	18
College	4	2
Upper Division	5	5
High School	1	2
* - - - - -		
Lower Secondary		
- - - - -		
Junior High School	17	11
High School	6	12
Lower Division	5	5

The names in use and preferred are almost identical for the upper secundary level as shown in Table V. Less agreement is indicated for the lower secondary, where in six cases the term High School is preferred to Junior High School, which is in present usage.

TABLE VI

Names Used and Names Preferred by Administrators
for the Upper and Lower Secondary
Levels of the 6-4-4 Plan

Upper Secondary	Number That Use	Number That Prefer
Junior College	19	11
College	3	10
Upper Division	1	1

Lower Secondary		

Junior High School	15	3
High School	9	18
Lower Division		1

Preference for College instead of Junior College is shown in Table VI. Four of these administrators preferred City College and two preferred Community College. One preferred Senior High and College. There is a strong preference for High School instead of Junior High School for the lower secondary level.

The last item concerning terminology, listed on both questionnaires in reference to the four-year junior college was: "Would you object to calling the lower secondary unit Type II High School?" Without exception all administrators answered no. Nineteen instructors answered no, seven answered yes and six were uncertain. Since Tables V and VI show that High School is the term preferred for the lower secondary unit of the 6-4-4 plan Type II might be used to differentiate it from the regular high school, just as Type II junior college refers to the four-year junior college in the same plan.

Experience of Instructors

Experience in the total number of years taught by any one teacher ranged from two to $38\frac{1}{2}$ years. Time in the 6-4-4 plan ranged from one to 23 years. The average number of total years taught was 18; exactly one half of this amount, or nine years, was the average number of years taught in the 6-4-4 plan. All instructors except five had previous teaching experience in some other type of educational organization. The types mentioned were: 8-4, 6-6-4, 6-3-3, 6-3-3-2, 6-2-4-2, 8-4-4, 4-4-4, 8-2, and 6-6.

Plans Converted to 6-4-4

The types of plans and the number of each that were converted to the 6-4-4 plan as reported by the administrators are listed in Table VII.

TABLE VII

The Types of Plan Converted to 6-4-4
and the Number of Cases of Each
as Reported by Administration

Types of Plan	Number of Cases
6-3-3	7
6-3-3-2	6
8-4-2	3
6-2-4	2
8-4	1
6-6	1
6-3-5	1
6-4-2	1

Preferences of Instructors and Administrators

The number of instructors who prefer to teach in a system organized on the 6-4-4 plan and the number of administrators who prefer the plan for their school system are shown in Table VIII.

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TABLE VIII

The Number and Per Cent of Instructors and
Administrators Preferring the 6-4-4 Plan

	Total Number Responding	Number Preferring	Per Cent Preferring
Instructors	28	20	71.4
Administrators	24	22	91.7

The 91.7 per cent of administrators preferring the 6-4-4 plan for their own systems corresponds closely with the 94.4 per cent of administrative officers in 18 four-year junior college situations preferring the same plan as reported in a study by Koos (21:18).

The Effect of the 6-4-4 Plan on Industrial Arts and Vocational Education

Instructors and administrators were asked whether the application of courses in industrial arts and vocational education seemed to be more effective in the 6-4-4 plan than in other plans in which they had worked.

TABLE IX

The Number and Per Cent of Instructors and Administrators
Indicating the Application of Courses in
Industrial Arts and Vocational Education
to be More Effective in the 6-4-4 Plan

	Total Number Responses	Number Agreeing to Greater Effectiveness	Per Cent Agreeing to Greater Effectiveness
Instructors	25	18	72
Administrators	21	15	71.4

It seemed pertinent to discover any trend toward broadening of the industrial arts and vocational programs when the 6-4-4 plan is installed. Instructors and administrators were asked to indicate whether more courses are being offered and to list these as industrial arts or vocational subjects. Tables IX and X summarize the opinions on expansion of the courses.

TABLE X

Number and Per Cent of Instructors and Administrators
Indicating More Industrial Arts Courses
in Schools with the 6-4-4 Plan

	Total Number Responses	Number Indicating More Courses	Per Cent Indicating More Courses
Instructors	22	14	63.6
Administrators	21	14	66.6

This consensus of opinion would agree with findings by Koos (26:397) when he discovered that the average number of industrial arts courses in 17 four-year junior high schools was 6.29 compared to 4.34 offered in 34 three-year junior high schools.

Vocational courses were expanded or increased in number in about the same number of cases as in indicated in Table XI.

TABLE XI

Number and Per Cent of Instructors and Administrators
Indicating More Vocational Courses in
Schools with the 6-4-4 Plan

	Total Number Responses	Number Indicating More Courses	Per Cent Indicating More Courses
Instructors	22	15	68.2
Administrators	10	7	70

It should be pointed out that one of the administrators who reported no more industrial arts courses being offered than previously says the plans call for additions to be made when housing is available. Another claimed expansion had been curtailed because the present plant is filled to capacity. Doubtless extension of courses will take place in numerous instances when construction of additional buildings and facilities is again feasible.

Courses Added with Adoption of 6-4-4 Plan

Eleven instructors, or 55 per cent of those responding, agreed that any additional courses which are available in their present programs were made possible as a direct result of adoption of the 6-4-4 plan. Nine disagreed and 12 had no opinion on this idea. Table XII lists the courses which were reported to have been added as a result of an enlarged program of industrial arts and vocational subjects which accompanied the conversion to the new plan. These courses were reported by 13 instructors and nine administrators. Four of the instructors who agreed that their programs were enlarged did not report on the additional courses.

TABLE XII

Courses Added to Industrial Arts and Vocational Programs
as a Result of Adoption of the 6-4-4 Plan
as Reported by 13 Instructors and 9 Administrators

Industrial Arts Courses	Number of Cases Reported	Vocational Courses	Number of Cases Reported
Advanced Metalwork	1	Aeronautics	2
Advanced Woodwork	3	Agriculture	2
Auto Shop	2	Auto Mechanics	1
Bench Metal	1	Drafting--Aero- nautical	1
Electricity	2	Electricity	1
Foundry	1	Industrial Or- ganization	1
General Powers	2	Industrial Power	1
Graphic Arts	1	Machine Shop	2
Machine Shop	3	Prefabrication	1
Mechanical Drawing	1	Print Shop	1
Metalwork	5	Refrigeration Plumbing	1
Plumbing	1	Sheetmetal	1
Print Shop	3	Strength of Materials	1
Woodwork	1	Upholstering	1
TOTALS	27		17

Where Vocational Education Should Begin

Industrial arts objectives are generally presumed to remain within the realm of general education. Likewise, it is usually agreed that industrial arts may form a suitable background for certain vocational subjects. A long-standing question is where should industrial arts stop and vocational education begin? Since the 6-4-4 plan offers more of a break between grades ten and eleven than the usual plan, it appeared to be an opportune time to ask instructors and administrators for their opinions. Should the distinctly industrial arts courses be completed in the four-year lower secondary level, leaving the strictly vocational courses to the four-year upper secondary group? Table XIII shows that 51.6 per cent of the instructors and 57.1 per cent of the administrators answered the question affirmatively.

TABLE XIII

Number and Per Cent of Instructors and Administrators
Agreeing That Industrial Arts Should Be Completed
in the Lower Secondary Level of the 6-4-4 Plan

	Total Number Responses	Number in Agreement	Per Cent in Agreement
Instructors	31	16	51.6
Administrators	23	16	57.1

A related question concerns whether or not industrial arts should be offered as a phase of general education in the upper secondary level.

TABLE XIV

Number and Per Cent of Instructors and Administrators Agreeing That Industrial Arts Should Be Offered in the Upper Secondary Level of the 6-4-4 Plan

	Total Number Responses	Number in Agreement	Per Cent in Agreement
Instructors	31	25	80.6
Administrators	22	16	72.7

Table XIV shows that 81.5 per cent of the instructors and 72.7 per cent of the administrators concurred with the idea of offering industrial arts courses in the four-year junior college. Seven instructors and eight administrators were inconsistent in checking in the affirmative that industrial arts courses should be completed in the four-year secondary level and that industrial arts should be offered as a phase of general education in the upper secondary level. It would be impossible to complete the industrial arts courses in the first level and still offer them in the second level.

Grade 10, A Motivating Factor

One of the claims for the addition of grade 10 to the lower secondary level is for the stimulation which is provided for students in industrial arts courses in grade 9 and lower. As shown in Table XV instructors who agreed that the addition of grade 10 enhances the program by motivation of students in lower grades were slightly in the majority, but administrators were almost unanimously in the affirmative. Four instructors placed a question mark in the position for response, one wrote "Don't see how it could," and one "undecided." Several written-in answers were given by administrators -- "possibly," "probably," "doubtful," "perhaps," and "I do not know."

TABLE XV

Number and Percentage of Instructors and Administrators
Agreeing that Stimulation to Lower Grade Levels
in Industrial Arts Results from Adding
Grade 10 to the Lower Secondary

	Total Number Responses	Number in Agreement	Per Cent in Agreement
Instructors	19	11	57.9
Administrators	17	16	94.7

Pertinent Questions for Administrators

The questionnaire for administrators included several questions which seemed to apply particularly to their field. The first question concerns whether or not the realization of objectives was as great as anticipated. Table XVI credits 78.9 per cent of the administrators responding to the question with an affirmative reply. One of the replies on the chart was checked "yes," with the comment: "with some reservations," and another with this note: "except for inter-school activities." Administrators from Napa and Vallejo, where the 6-4-4 plan was adopted about one year ago, said insufficient evidence was available for a final conclusion, but indicated that the change has been very satisfactory.

A more economical use of the school plant and of shop facilities and equipment was the opinion of 100 per cent of the administrators, and 95.4 per cent agreed to a more economical use of teaching personnel.

Higher retention of students after grade 12 was reported by 94 per cent of the administrators. A principal from Pasadena claimed, "...number going from 12th to 13th grade doubled with the first class under 6-4-4." In Parsons, Kansas 80 per cent of the 12th grade students enrolled in grade 13 before the war.

TABLE XVI

Number and Percentage of Affirmative Answers to
Miscellaneous Pertinent Questions for Administrators
in Schools Operating on the 6-4-4 Plan

	Number Responses	Number Answering in Affirmative	Per cent Answering in Affirmative
1. Has the realization of objectives been as great as anticipated?	19	15	78.9
2. Is there a more economical use of:			
A. School plant?	22	22	100
B. Teaching personnel?	22	21	95.4
C. Shop facilities and equipment?	20	20	100
3. Has the usual drop in enrollment after grade 12 been reduced?	17	16	94.1
4. Has the quality of teaching in grades 11 and 12 improved because of the necessity to employ instructors cer- tified also for grades 13 and 14?	16	15	94
5. Has there been an increase in super- visory positions in industrial arts and vocational education as a result of the 6-4-4 plan?	22	5	22.7

Improvement in Quality of Instruction

Another effect of adding grades 13 and 14 to the four-year upper secondary level has been in improvement in the quality of instruction in grades 11 and 12. The reason for this is claimed to be the higher standards of certification necessary for the instructors who may teach in all four grades. Ninety-four per cent of the administrators who responded to this question agreed that the quality of the instruction was improved.

Slight Change in Number of Supervisory Positions

A final question which was addressed only to the administrators was concerned with any increase in supervisory positions in industrial arts or vocational education. Only 22.7 per cent of the administrators reported employment of additional supervisors. In one case the increase was said to be in a large measure due to an enlarged enrollment. In another system an increase was said to be recognized but not filled.

Causative Factors in the Adoption of the 6-4-4 Plan

In search for the factors which contribute most to the adoption of the 6-4-4 plan of organization a check list was devised, based upon the various reasons reported

by educators for preferring or liking the plan (22:215). Administrators and instructors were asked to rate the factors in order of importance making at least four or five choices.¹ Tables XVII and XVIII give the frequency of mention for each of the factors and the number of times each factor was rated first, second, third, fourth, or fifth. The desire for better organization to meet the overall objectives of secondary education was most frequently checked by both instructors and administrators. The administrators rated the creation of more effective curriculums through unification and extension of offerings as second highest, the provision for more homogeneous grouping of pupils third, and promotion of economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings as fourth. Instructors rated meeting the needs of the non-college or terminal group second, more effective curriculums through unification and extension of offerings third, and in fourth place the more homogeneous grouping of pupils.

1. The instructors were asked to make at least four choices; administrators were asked to make at least five choices.

TABLE XVII

Factors Which Contributed Most to the Adoption of the
6-4-4 Plan as Rated by Administrators

Causative Factors	Fre- quency of Mention	Number Times Rated First	Number Times Rated Second	Number Times Rated Third	Number Times Rated Fourth	Number Times Rated Fifth
1. Promotion of economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings.	14	3	3	4	1	3
2. Creation of more effective curricula through unification and extension of offerings.	16	5	5	5	0	1
3. Shifting of grades 11 and 12 to new buildings to alleviate crowded conditions.	5	1	1	1	1	1
4. Desire for better organization to meet overall objectives of secondary education.	17	8	3	0	5	1
5. Provision for more homogenous grouping of pupils in both the lower and upper secondary units.	15	2	3	5	4	1
6. The objectives of the non-college or terminal group.	8	1	0	1	4	2
7. Need for longer retention due to increased age of first employment.	9	0	2	0	2	5
8. Public education through grade 14 available to all by law.	4	0	2	0	1	1
9. Need for junior college but unable to support 2-year junior college.	7	0	4	1	0	1
10. Need for junior college within reasonable traveling distance.	9	1	1	4	2	1

TABLE XVIII

Factors Which Contributed Most to the Adoption of the 6-4-4 Plan
as Rated by Instructors in Industrial Arts and Vocational Subjects

Causative Factors	Fre- quency of Mention	Number Times Rated First	Number Times Rated Second	Number Times Rated Third	Number Times Rated Fourth
1. Economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings.	13	6	1	3	3
2. More effective curricula through unification and extension of offerings.	23	4	12	5	2
3. Better organization to meet overall objectives of secondary education.	26	5	9	8	4
4. More homogeneous grouping of pupils in both lower and upper secondary.	19	2	3	7	7
5. Meeting the needs of the non-college or terminal group.	24	8	5	5	6
6. Longer retention of students -- necessary because of increased age of first employment.	15	5	3	4	3

The item which most often received first rating by the administrators was the desire for better organization to meet the overall objectives of secondary education. Next in order was the creation of more effective curriculums through unification and extension of offerings, and third the promotion of economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings. First rating by the instructors was given to meeting the needs of the non-college or terminal group and second rating to economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings.

An accurate report of the findings must include two items written in by administrators. One gave first choice to "Community pride in wanting what other populous cities or counties had." The other gave fourth place to "Inter-district rivalry intensified in a 'county junior college' election."

Summarizing the factors which were considered by administrators and instructors to contribute most to the adoption of the 6-4-4 plan better organization to meet the overall objectives was rated highest by both groups. Other important factors are: economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings; meeting the needs of the

non-college or terminal group; the creation of more effective curriculums through unification and extension of offerings, and the provision for more homogeneous grouping of pupils.

Factors Prohibiting the Adoption of the 6-4-4 Plan

Both questionnaires included a check list of objections to the 6-4-4 plan, or obstacles standing in the way of achieving this type of organization. Tables XVIX and XX list the frequency of mention of the objections and the number of times each was rated first, second, third, fourth, or fifth. Habits and thinking of administrators, teachers, parents, and pupils favor retention of 8-4-2 plan was checked most frequently by both administrators and instructors. The item checked next highest by administrators was a strong athletic tradition discourages; third was junior college administrators and teachers wish to maintain "collegiate" standing. All the above items reflect the unfavorable attitude of an individual or group with some authority. The same holds true for the items rated fourth and fifth in importance: adminis-
setup is for other types of organization and is static,
and communities supporting high schools do not wish to
lose the last two years.

TABLE XVIX

Obstacles to Acceptance of the 6-4-4 Plan as Rated by Administrators

Objections	Fre- quency of Mention	Number Times Rated First	Number Times Rated Second	Number Times Rated Third	Number Times Rated Fourth	Number Times Rated Fifth
1. Communities supporting high schools do not wish to relinquish 2 years.	8	2	2	0	2	2
2. Communities cannot agree to locating 4-year junior college elsewhere.	3	0	0	1	2	0
3. Eight-year elementary schools do not wish to lose grades 7 and 8.	7	1	0	2	1	3
4. Administrative setup is for other types of organization and is static.	9	1	3	1	2	2
5. Change under school code difficult, grades 13 & 14 not part of secondary.	5	1	0	0	1	3
6. Habits of administrators, teachers and parents favor retention of 8-4-2 plan.	19	11	3	5	0	0
7. Administrators and teachers in 4-year high school face insecurity of position.	4	0	3	0	1	0
8. Junior college administrators and teachers wish to maintain "collegiate" standing.	10	0	2	4	4	0
9. No financial aid for districts reorganizing.	4	1	1	1	1	0
10. "Unified" district lacking & difficult.	3	0	1	1	1	0
11. Present housing facilities inadapttable.	8	2	2	3	1	0
12. Strong athletic tradition discourages.	15	3	4	2	4	2

TABLE XX

Obstacles to Acceptance of the 6-4-4 Plan as Rated by Instructors

Objections	Fre- quency of Mention	Number Times Rated First	Number Times Rated Second	Number Times Rated Third	Number Times Rated Fourth
1. Habits of administrators, teachers, and parents favor retention of 8-4-2 plan.	24	10	9	1	2
2. Eight-year elementary schools do not wish to lose grades 7 and 8.	14	2	1	4	7
3. Administrators and teachers in 4-year high school face insecurity of position.	15	3	1	6	5
4. Junior college administrators and teachers wish to maintain "collegiate" standing.	17	3	6	5	4
5. Present housing facilities inadaptable.	21	6	6	5	4
6. Strong athletic tradition discourages.	14	3	3	4	4

One objection given first choice by an administrator was written in -- "graduates from grade 12 do not wish to return to grades 13 and 14 in same school, but wish to go elsewhere." Second choice was given to another written-in item -- "Discourages students from other areas from coming where high school students are as they are outnumbered by them 2 to 1."

In second place under frequency of mention instructors placed present housing facilities inadapttable. In third and fourth place they agreed on junior college administrators and teachers wish to maintain "collegiate" standing and administrators and teachers in four-year high school face insecurity of position.

Three instructors wrote in objections which should be recorded here. Two of the items were worded differently but were concerned with homogeneous grouping in the lower secondary and upper secondary. Both writers placed first emphasis on their written-in items which are as follows:

1. 7th grade pupils are too young to be thrown with 10th graders in the junior high school, and 11th graders are too young to be thrown with 14th graders.
2. Very bad for young 7th Grade pupils to be placed with 10th Grade, also for 11th Grade with 14th.

The third written-in item received first emphasis also as the writer says:

It has nothing to offer. This 6-4-4 is the most vicious and detrimental fake that has been frusted upon the schools that I have experienced in thirty years. Look at the original data before deciding to champion the cause of the 6-4-4 or any other trick panacea for solving our problems.

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CHAPTER VIII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A survey of the literature on the 6-4-4 plan and the results of questionnaires sent to administrators and instructors in industrial arts and vocational education in schools operating on the 6-4-4 plan form the source of information for this study.

The first school system in the United States to adopt the 6-4-4 plan was Pasadena, California in 1924. At present there are about 15 school systems in five states operating on the plan, and several other systems committed to it. Recent emphasis on the plan by leaders in secondary education and national educational bodies is significant. Also significant is the evidence of a trend toward including grades 13 and 14 in secondary education.

The majority of the educators reporting in the literature and in the survey prefer the 6-4-4 plan of organization. Some of the main advantages of the plan are:

1. Better organization to meet the over-all objectives of secondary education.
2. More effective curriculums through unification and extension of offerings.
3. Promotion of economies in administrative machinery and avoidance of duplication of supplies, equipment, and buildings.

4. A more homogeneous grouping of pupils.
5. More adequately meeting the needs of the non-college or terminal group.

Some of the specific advantages to the fields of industrial arts and vocational education are manifested in a broader and more adequate program of orientation in the various areas of industrial arts in the four-year junior high school plus a four-year program of specialization in the junior college designed for the non-college or terminal group as well as for those who wish to go on to college. Both the upper and lower secondary operate under single administration and with more shop rooms, equipment, and facilities available.

Granted that the 6-4-4 plan has merit, there are many obstacles to its adoption. Some of the more important of these prohibiting factors are:

1. The habits and thinking of administrators, teachers, parents, and pupils favor the retention of the eight-year elementary school, the four-year high school, and the two-year junior college.
2. A strong athletic tradition.
3. Junior college administrators and teachers wish to maintain "collegiate" standing.
4. Present housing facilities inadaptable.
5. Administrators and teachers in four-year high school face insecurity of position.
6. Lack of financial aid for districts wishing to reorganize.

Conclusions

1. There is need for standardization of names for the upper levels of the 6-4-4 plan. It seems that the national educational organizations which have endorsed the plan and the personnel of the schools operating on the plan should cooperate in the standardization and clarification of names used for the different levels.
2. The lower and upper secondary levels of the 6-4-4 plan point toward the programs of education outlined in Education for All American Youth (10:1-421) and Planning for American Youth (33:2-63).
3. Corollary to "The greatest amount of good for the greatest number of people" the greatest amount of education for the greatest number of people should result from the 6-4-4 plan since it is considered the most effective and the most economical means of bringing the full advantage of the junior high school and the junior college to the community.
4. Administrators, teachers, parents, and other interested groups should support our national educational bodies and assist in the establishment of legislation which will include grades

13 and 14 in secondary education. Likewise, they should "sell" the 6-4-4 plan strictly on its merits and help overcome the obstacles to progress.

5. Establishment of the 6-4-4 plan will not necessarily bring all its potential advantages. Careful planning of internal organization is essential, and close cooperation in carrying the plans through to completion will yield the desired results.
6. Instructors in industrial arts and vocational education may have need for greater specialization. The vertical distribution of their efforts increases and the horizontal spread decreases in the 6-4-4 plan.
7. There may be need for increased cooperation in the transfer of students from grade 10 to grade 11, since this is the main break between the secondary levels. Proper transmission of the records of industrial arts students plus the coordinated efforts of the instructors and counsellors in both secondary levels should result in the proper placement of each student in the junior college program.

8. Industrial arts instructors in both the four-year junior high school and the four-year junior college should look toward a program which more adequately fulfills all the objectives of industrial arts because more courses are offered. There is more time for these courses, and there are more adequate facilities with which to carry through such a program. Vocational instructors should likewise be better able to meet their objectives.

Recommendations for Further Study

There should be further study of: 1) Curriculums in industrial arts and vocational education in schools operating on the 6-4-4 plan as compared with those in a similar number of systems operating on the 6-3-3-2 plan, and 2) The overlapping of equipment, buildings, and other facilities in the upper levels of the 6-3-3-2 and other plans, as compared with economies in these same facilities possible with the 6-4-4 plan.

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APPENDIX

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APPENDIX

The Questionnaires:

Two questionnaires were used, one each for the administrators and the instructors. A letter was prepared and sent with each of the questionnaires. The inside front cover of both questionnaires presented a chart from The 44th Yearbook of the National Society for the Study of Education (28:II) that illustrates the functional organization of the American school system. The purpose of this chart was to focus the attention of the respondents on the 6-4-4 plan of organization and the names used for its various levels. Copies of the letters and the chart appear on the following pages of the appendix.

The remainder of the appendix lists the two sets of questions, the first set for the administrators, and the second set for the instructors.

LETTER TO ADMINISTRATORS

40 North Ann Street
Ventura, California

Leaders in education are heartily endorsing the 6-4-4 plan of organization. More States are making provision for extending the secondary level to include Grades 13 and 14. As an educator you will understand the trend towards the expansion of free public education. You will appreciate your position as administrator in a school system which already operates upon a plan of organization recently proposed for adoption by the National Society for the Study of Education.

My purpose in writing to you is to seek your cooperation in a study of the implications of the 6-4-4 plan for the development of industrial arts and vocational education. It is to you, the experienced leaders of this type of school organization -- leaders who have actually observed the effects of the 6-4-4 plan, that we look for guidance. To that end the enclosed questionnaire is directed. Your cooperation will be highly appreciated.

If you wish to retain the chart on page one of the questionnaire you may do so, but will you please write your name and school address on the back sheet of the remainder of the questionnaire which is to be returned. If you desire a resume of this study, please indicate this on the final page also.

Very truly yours,

Robert E. Buxton,
Coordinator.

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LETTER TO TEACHERS

40 North Ann Street
Ventura, California

Dear Teacher:

Leaders in education are heartily endorsing the 6-4-4 plan of organization. More states are making provision for extending the secondary level to include Grades 13 and 14. As an educator you will understand the trend towards the expansion of free public education. You will appreciate your position as instructor in a school system which already operates upon a plan of organization recently proposed for adoption by the National Society for the Study of Education.

My purpose in writing to you is to seek your cooperation in a study of the implications of the 6-4-4 plan for the development of industrial arts and vocational education. It is to you who are experienced in this type of school organization—who have actually observed the effects of the 6-4-4 plan, that we look for guidance. To that end the enclosed questionnaire is directed. Your cooperation will be highly appreciated.

If you wish to retain the chart on page one of the questionnaire you may do so, but will you please write your name and school address on the back sheet of the remainder of the questionnaire which is to be returned. If you desire a resume of this study, please indicate this on the final page also.

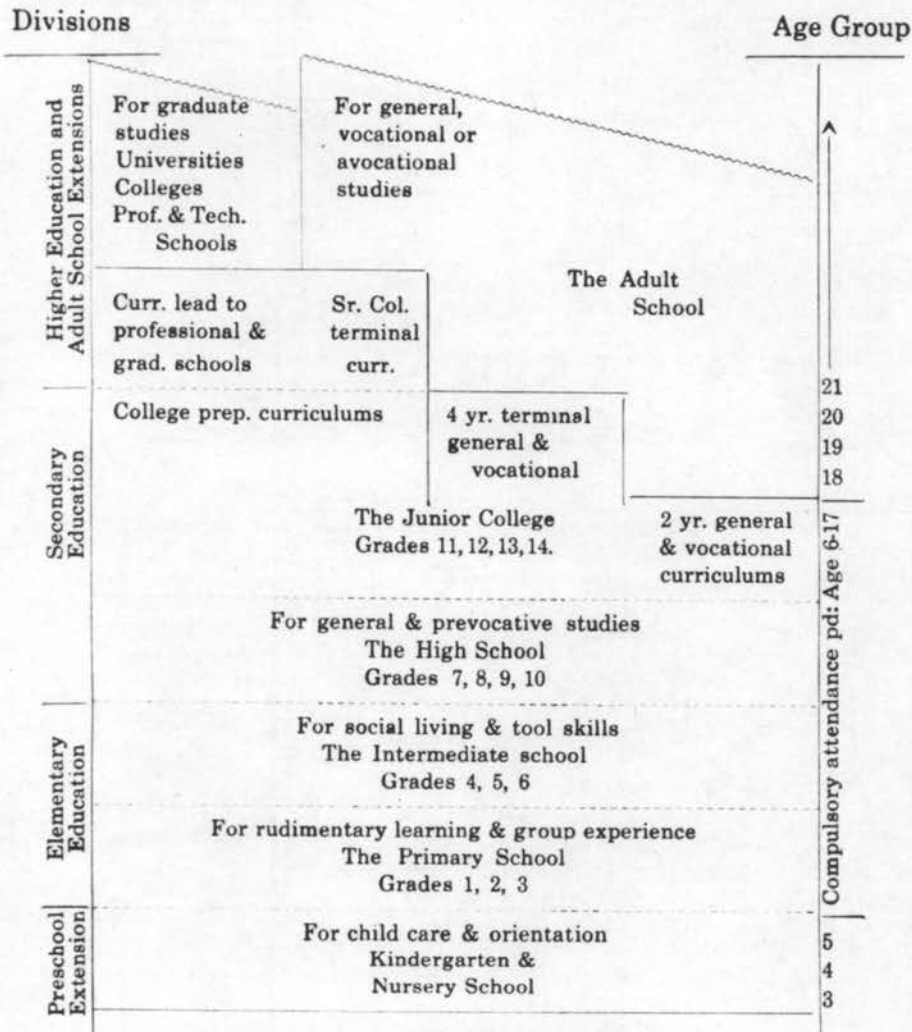
Very truly yours,

Robert E. Buxton,
Coordinator.

CHART: THE FUNCTIONAL ORGANIZATION
OF THE AMERICAN SCHOOL SYSTEM

TERMINOLOGY OF THE 6-4-4 PLAN

This chart, from the 44th yearbook of the national society for the Study of Education, is seemingly the best authority of terminology covering the 6-4-4 plan of organization.



FUNCTIONAL ORGANIZATION OF THE AMERICAN SCHOOL SYSTEM

Speaking of the lower secondary (grades 7-10) the yearbook says, "It may be called the high school," and the upper unit "... may be called the junior college."

QUESTIONS INCLUDED IN THE
QUESTIONNAIRE FOR ADMINISTRATORS

NOMENCLATURE

_____ What name do you use for your lower secondary unit?

_____ What name do you PREFER for this unit?

_____ What name do you use for your upper secondary unit?

_____ What name do you PREFER for this unit?

_____ The four-year junior college is accredited as Type II. Would you object to calling the lower secondary unit Type II High School?

Please make any other comments or suggestions you may wish concerning terminology.

Yes No

Do you prefer the 6-4-4 plan of organization for your system?

From what type of organization was your present plan converted?

MISCELLANEOUS PERTINENT QUESTIONS

Yes No

- | | | |
|-------|-------|---|
| _____ | _____ | 1. Has the realization of objectives under the 6-4-4 plan been as great as anticipated? |
| _____ | _____ | 2. Is there a more economical use of: |
| _____ | _____ | A. The school plant? |
| _____ | _____ | B. Teaching personnel? |
| _____ | _____ | C. Shop facilities and equipment? |
| _____ | _____ | 3. Has the usual drop in enrollment after grade 12 been reduced? |
| _____ | _____ | 4. Has the quality of teaching in grades 11 and 12 improved because of the necessity to employ instructors certified also for grades 13 and 14? |
| _____ | _____ | 5. Does stimulation of students in industrial arts subjects result from the addition of grade 10 to the lower secondary unit? |
| _____ | _____ | 6. Has there been an increase in supervisory positions in industrial arts and vocational education as a result of the 6-4-4 plan? |

CAUSATIVE FACTORS IN THE ADOPTION
OF THE 6-4-4 PLAN

Which factors in your opinion contributed most to the adoption of the 6-4-4 plan in your system?

(Note: Please rate in order of importance; letter your first choice A, second B and so on, making at least five choices.)

- _____ 1. Promotion of economies in administrative machinery and avoidance of duplication of supplies, equipment and buildings.
- _____ 2. Creation of more effective curricula through unification and extension of offerings.
- _____ 3. Shifting of grades 11 and 12 to new buildings to alleviate crowded conditions in old structures.
- _____ 4. Desire for better organization in order to meet overall objectives of secondary education.
- _____ 5. Provision for a more homogeneous grouping of pupils in both the lower and upper secondary units.
- _____ 6. The objective of the non-college or terminal group.
- _____ 7. Realization of the need for longer retention of students due to increased age of first employment.
- _____ 8. Public education through grade 14 made available to all by state law.
- _____ 9. Desire to operate a junior college in your community, realizing that financial support was inadequate for a separate two-year junior college.
- _____ 10. Need for a junior college within reasonable traveling distance.
- _____ 11. Other: _____

OBSTACLES TO THE ACCEPTANCE OF THE 6-4-4 PLAN

Which factors in your opinion are the greatest obstacles to the establishment of the 6-4-4 plan?

(Note: Will you please rate these in order also?)

- ___ 1. Communities now supporting union high schools do not wish to relinquish the last two years.
- ___ 2. Communities unwilling to agree that another community is to be the location of the four-year junior college.
- ___ 3. Eight-year elementary schools do not wish to lose grades 7 and 8.
- ___ 4. Administrative machinery is set up for other types of organization and is static.
- ___ 5. School code makes conversion difficult, or does not include grades 13 and 14 as secondary education.
- ___ 6. Habits and thinking of administrators, teachers, parents, and pupils favor retention of eight-year elementary school, four-year high school, and two-year junior college.
- ___ 7. The administrative heads and teachers in a four-year union high school face insecurity of position.
- ___ 8. Desire of junior college administrators and teachers to maintain "collegiate" standing.
- ___ 9. Lack of state financial aid for districts reorganizing on the 6-4-4 basis.
- ___ 10. Lack of a "unified" district and difficulty of establishing one.
- ___ 11. Present building or housing facilities in-adaptable.
- ___ 12. Strong high school tradition discourages.
- ___ 13. Other: _____

QUESTIONS INCLUDED IN THE
QUESTIONNAIRE FOR INSTRUCTORS

NOMENCLATURE

- _____ What name do you use for your lower secondary unit?
- _____ What name do you PREFER for this unit?
- _____ What name do you use for your upper secondary unit?
- _____ What name do you PREFER for this unit?
- _____ The four-year junior college is accredited as Type II. Would you object to calling the lower secondary unit Type II High School?

Please make any other comments or suggestions you may wish concerning terminology.

MISCELLANEOUS PERTINENT QUESTIONS

- _____ How many years have you taught?
- _____ How long have you taught in the 6-4-4 plan?
- _____ What types of organization were used in systems where you taught previously?

Yes No

_____ Do you prefer to teach in a system organized on the 6-4-4 plan?

_____ Does the application of courses in industrial arts and vocational education seem to be more effective in your present plan?

—

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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CAUSATIVE FACTORS IN THE ADOPTION
OF THE 6-4-4 PLAN

Which of the following factors in your opinion contribute most to the success of the 6-4-4 plan?

(Note: Please rate in order of importance; letter your first choice A, second B, and so on, making at least four choices.)

- _____ Economies in administrative machinery and avoidance of duplication of supplies, equipment and buildings.
- _____ More effective curricula through unification and extension of offerings.
- _____ Better organization to meet overall objectives of secondary education.
- _____ More homogeneous grouping of pupils in both the lower secondary and the upper secondary units.
- _____ Meeting the needs of the non-college or terminal group.
- _____ Longer retention of students -- necessary because of increased age of first employment.

Other: _____

OBSTACLES TO THE ACCEPTANCE OF THE 6-4-4 PLAN

Which factors in your opinion are the greatest obstacles to the establishment of the 6-4-4 plan?

(Note: Please rate in order of importance; letter your first choice A, second B, and so on, making at least four choices.)

- _____ Habits and thinking of administrators, teachers, parents, and pupils favor retention of eight-year elementary school, four-year high school, and two-year junior college.
- _____ Eight-year elementary schools do not wish to lose grades seven and eight.
- _____ The administrative heads and teachers in a four-year union high school face insecurity of position.
- _____ Desire of junior college administrators and teachers to maintain "collegiate" standing.
- _____ Present building or housing facilities not adapted.
- _____ Strong high school athletic tradition discourages.
- _____ Other: _____
