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Problems of Small High Schools with Some Special Reference to the Problems of Curriculum

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PROBLEMS OF SMALL HIGH SCHOOLS

WITH SOME SPECIAL REFERENCE
TO THE PROBLEMS OF CURRICULUM

(TITLE)

BY

John F. Griffin

PLAN B PAPER

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
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Education 481

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I HEREBY RECOMMEND THIS PLAN B PAPER BE ACCEPTED AS
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INTRODUCTION

The purpose of this paper is to establish a temporarily valid curriculum for a high school numbering five hundred students. In doing so, it is necessary to be fully cognizant of the circumstances which have made modification of older curriculums necessary.

At the turn of the century, enrollment in high school was largely considered to be a privilege, and a small select group availed themselves of the opportunity to prepare for a substantially specialized goal. In today's high schools, however, there are more students with divergent needs, and this necessitates curriculum modification if the school is to fulfill its obligation of preparing citizens to take their place in our society.

One need for a curriculum change has been brought about by the vanishing of the blue collar worker. Most of the occupational trends in the United States require personnel with increased general education and advanced technical and professional training. This circumstance has considerably broadened the purview of the high school in our society today.

Additional changes in the curriculum of many schools are also necessary if educators are to successfully encourage the potential high school dropout to remain in school. Those

students who fail to have their names placed on a high school diploma are frequently the ones whose names appear instead on the public relief roles. Too often they fail to make a significant worthwhile contribution to our society and become rather a burden to their fellow citizens.

Curriculum changes must also include provisions for discovering and challenging the superior student. After these students have been identified as superior and talented students who might benefit from rigorous and formal educational experiences, then the standards for each pupil might be set according to his interest and potential.

Curriculum development is dependent upon adequate financing, and any modifications of current practices must take this into account, detailing the extent of available funds.

CHAPTER I

SIZE OF A SMALL HIGH SCHOOL

School District Reorganization

In most cases it would appear that school district reorganization would bring about better school programs. For example, consolidation of non-high school districts was authorized as early as 1917. Apparently, the reason for this was to provide for larger enrollments and thus permit teachers to devote more of their time to areas of special interest. It was soon evident, however, that this type of program was not enough to meet the needs of all students.

As the number of students in the high school grew, a need for more teachers and classrooms was created. The single unit was no longer meeting the needs of the students by simply preparing them for college. Those needs could be efficiently met only by forming larger districts.

The number of school districts in the state of Illinois, for example, was reduced during the period 1945 to 1960 by 86%. The resultant number of school districts is still too large according to many educators. Enrollments of less than five hundred in the high school were reported by 164 schools.

Of these, fifty-one had enrollments of less than one hundred.¹ It would appear that there are far too many of these small schools to provide an adequate school program. In the past, inadequate or insufficient roads have been used to justify the existence of the smaller unit. However, recent transportation improvements in most areas now make possible school districts of sufficient size to offer a school program to meet the needs of all students.

Size of the School

Determining the ideal enrollment for a given school is difficult; however, most authorities agree that "unless a graduating class contains at least one hundred students, classes in advanced subjects and separate sections within all classes become impossible except with extravagantly high costs".²

For the best all-around educational program at less than exorbitant costs, many recommend graduating classes of at least one hundred students.³ There are some who would place the lowest number in the high school at 600 and others who would place it at no less than 250.⁴ The area the school

¹George T. Wilkins, "We Must Take a New Look at School District Reorganization," Illinois Education, (March, 1961), p. 293.

²James B. Conant, The American High School Today (New York: McGraw-Hill Book Company, Inc., 1959), p. 77.

³J. Lloyd Trump and Dorsey Baynham, Focus on Change-Guide to Better Schools, (Chicago: Rand McNally and Company, 1961), p. 17.

⁴Rep. Charles W. Clabaugh, "Further District Reorganization Needed," Illinois Education, (November, 1961), p. 123.

happens to be located in will have something to do with the size of the school, since in most cases the size and efficiency of a school is sometimes sacrificed for convenience.

A most important aspect of this problem which is not to be overlooked is schools which lack full recognition. The largest of these schools had 183 pupils in attendance, and the smallest had only 36. Of the school districts which had fewer than 200 students, 25% of them lacked full recognition. On the opposite side of the study, one finds that all of the schools with over 200 students were fully recognized.¹

The cost per pupil in average daily attendance of operating a small high school is even more significant when one considers that the average per pupil cost of all districts was \$572, and the cost of the smallest high school was \$909 in 1959. This is nearly 60% more for the small high school. The schools within the next group of average daily attendance was \$758, or about 1/3 more than the median per pupil cost. The group from 500 to 800 in average daily attendance shows the greatest return for the money spent.²

A study, made by Harold C. Hand at the University of Illinois, shows that the number of school subjects offered are directly proportional to the size of the school. The highest costs are with the schools which have the smallest enrollments. The following tables of Harold C. Hand, found in

¹Rep. Clabaugh op. cit., p. 123.

²Ibid.

the article by George T. Wilkins, will illustrate part of Hand's findings.

Table A is divided into five categories, with the highest per-capita cost to the left and the lowest per-capita cost to the right. There are more schools that were below 100 enrollment and pay the highest per-capita cost. The schools with 100-399 enrollments have less in the lowest per-capita category, but they do not have as few as the 400-999 enrollments in the highest per-capita cost. The schools with 100 or more students have a few more in the highest per-capita cost, but they have a more even distribution in the 5 categories from the highest to the lowest. Categories 3 and 4 have the largest number of schools in them except for the schools whose enrollment is below 100. There was not a cost range given with this table.

Table A clearly illustrates that the cost of educating students is directly related to the number of students in the school. Smaller high schools pay more for education than larger ones do until the latter reach an enrollment of 1,000, when costs again begin to rise. Although it cannot be definitely substantiated from the facts presented in the table, the rise in cost at the 1,000 enrollment level could be attributed to increased course offerings.

Divided into 5 categories in this table, the schools are rated highest to lowest, judged on per-capita cost of

TABLE A¹

Percentage of Schools of Each Size
in Each Per-Capita Cost Category

School Enrollment (Highest)	Per-Capita Cost Category				
	1	2	3	4	5 (Lowest)
Below 100	57%	14%	14%	11%	5%
100-399	9	16	33	36	7
400-999	1	10	23	51	14
1000+	14	16	25	40	3
Total	14	14	28	37	7

¹George T. Wilkins, op. cit., p. 296.

their students. From this one can see that the largest percentage of the schools with 100 or below enrollment pay the highest per-capita cost. There is a smaller percentage in the remaining 4 categories.

There are other advantages for the larger schools which will become apparent from Table B.

In the schools whose enrollment is 100 or below, only 84% offer four years of English. In the schools of 100-399, there are 99% offering four years of English. The rest of the schools with larger enrollments offer four years of English.

In the schools of 100 or below, there are only 40% offering 4 years of mathematics and only 84% of the schools of 100-399 offering four years of mathematics. The rest with larger enrollments all offer four years of mathematics.

In the schools of 100 or below, there are only 16% offering four years of science, 47% of the schools with 100-399, 91% of the schools with 400-999, and all of the schools of 1,000 or more offer four years of science.

The same will hold true for the schools in social studies, but the percents are lower for the smaller schools as only 9% of the 100 or below have 4 years of social studies, 50% of the 100-399, 77% of the 400-999, and one finds all of the schools with enrollments of 1,000 or more have four years of social studies.

There are none of the schools as a group that rate a 100% in offering of a modern foreign language for three or more full years. However, the schools with the larger enrollments have more offering a modern foreign language. Of the schools with 100 or below none offered three or more full years of one foreign language, only 1% in the 100-399, 17% in the 400-999, and 63% in the schools with 1,000 or more.

Of all the schools checked, only 7% of the 100 or below offered all of the courses mentioned above except the modern foreign language. There were 26% for the 100-399 group, 71% for the 400-999 group, and 100% for the 1,000 or more who offered all except the modern foreign language.

In Table B one can see that the enrollment of a school has a great deal to do with the curriculum offered. The schools that are below 100 enrollments rate lower despite the fact that they offer courses in English, mathematics, science, social studies, and foreign language. The course offering of a school increase with the number of students. The schools with 1,000 or more students offer more of the college preparatory courses with the exception of modern foreign language. From this table one can see why a student entering college from a larger school might be better prepared.

One could see advantages from this table for college preparatory courses, and after examining Table C, other advantages that would involve even more students will become apparent.

TABLE B¹

Percentage of Four- and Six-Year Schools of Each Size Offering at Least the Minimum Amount of Work, Grades 9-12, in Standard Academic Subjects Which an Adequate College-Preparatory Program Contains

Kind and Amount of Work Offered	School Enrollment				Total
	Below 100	100-399	400-999	1000 or more	
Four or more full years of English	84%	99%	100%	100%	97%
Four or more full years of mathematics	40	84	100	100	84
Four or more full years of science	16	47	91	100	58
Four or more full years of social studies	9	50	77	100	56
Three or more full years of some one modern foreign language	0	1	17	63	12
All of the above	0	1	17	63	12
All of the above except the modern foreign language	7	26	71	100	41

¹Wilkins, op. cit., p. 296.

There is continuity from Table B to Table C. The last entry of Table B, covering the basic subjects is the beginning entry of Table C. However, Table C goes on to cover not only basic subjects but fine arts, general education, and vocational subjects.

Of the schools of 100 enrollment or below only 2% offer one full year of art and course work in music. Of the schools of 100-399, only 1% offered a full year of art and course work in music. In the schools of 400-999 enrollment, there were 14% who offered a full year of art and course work in music. There were 35% of the schools with 1,000 or more students who offered a full year of art and a full year of course work in music.

In the fields of general agriculture, general home economics, and general industrial arts of the schools with enrollments of 100 or below, only 5% offered one or more full years. The same percentage was true for the schools of 100-399 enrollments, but the schools of 400-999 enrollments had 17% offering work in these fields. In the schools whose enrollments were 1,000 or more, 74% of them offered work in at least three of these fields.

In schools that offered at least three courses in the following fields: vocational business education, vocational home economics, and vocational industrial education, only 9% of them with enrollments of 100 or below offered training in

TABLE C¹

Percentage of Four- and Six-Year Schools of Each Size Offering at Least the Minimum Combined Amounts of Work, Grades 9-12, in 1) Standard Academic Subjects Other Than Foreign Language, 2) Fine Arts, 3) Non-Academic Subjects of General Education, and 4) Vocational Subjects Which an Adequate High-School Program Contains

Kind and Combined Amount of Work	School Enrollment				Total
	Below 100	100- 399	400- 999	1000 or more	
1. Four or more full years of work in each of English, mathematics, science, and social studies.	7%	26%	71%	100%	41%
2. One or more full years of art plus one full year of course work in music.	2	1	14	35	8
3. One or more full years of work in at least three of the following fields: general agriculture, general home economics, and general industrial arts.	5	5	17	74	16
4. At least the minimum necessary for successful entry into an occupation in at least three of the following fields: vocational business education, vocational home economics, and vocational industrial education.	9	22	26	28	7
5. All of the above.	0	0	0	7	1

¹Wilkins, op. cit., p. 296.

these courses. There was only 22% of the schools with enrollments of 400-999, and 28% of the schools whose enrollments were 1,000 or more that could and did offer these courses as a minimum necessary for successful entry into an occupation.

The only schools to offer work in all of the above subjects were the schools with enrollments of 1,000 or more.

From Tables B and C one can determine that not only do the larger schools offer more college preparatory courses for students, but they also offer more in the other areas such as art, music, general home economics, and general industrial arts. The larger schools of 1,000 or more also offer more vocational subjects. The size of the school is not necessarily the only answer; however, the percentages are definitely in favor of the larger schools as far as course offerings are concerned.

Problems of Small Enrollments

When school enrollments drop, the school program suffers; courses are taken out of the curriculum, teachers are forced to teach subjects that they are not prepared to teach, educational standards drop, and the cost of education goes up. This forces a small school to pay exorbitant prices for school operation.

In an article by Rep. Charles W. Clabaugh in 1961, he noted that the small schools with fewer than 100 in attendance

have 13.8 % of their teachers teaching on temporary approval. In the school with from 400 to 600 students the number of teachers with temporary approval was only 0.2%.¹ Rep. Clabaugh found further that the number of teachers who were on temporary approval to be alarming.

In a school where twelfth grade enrollment is only about 40, it will be a rare district which would have more than 10 students who have the ability to carry twelfth grade mathematics, science and foreign language. Probably there would be at least 3 of these who would not want to participate in these courses, further reducing the number of students to about 7.² This would have a tendency to increase the cost of education. There would probably be additional difficulty in maintaining interest, and very few schools in this category could afford to offer the academic subjects that are needed.

The picture for vocational subjects is even worse. The cost of the capital outlay for equipment as well as the salaries of the special vocational instructors would run to such a large figure that they become almost unattainable.³

Most small districts must face the fact that, if they hold on to their schools, it will be with a narrower curriculum and with an ever increasing cost for education. After careful

¹Rep. Clabaugh, op. cit., p. 124.

²Conant, op. cit., p. 37.

³Ibid., p. 39.

consideration of this dilemma, some small school communities claimed the heart of the matter was quality and not money. They demonstrated this with their resistance to anyone who even considered setting an arbitrary minimal enrollment figure.¹

The districts further showed a willingness to hold on to prevailing boundaries by paying the increased costs of education, and graduates of these institutions demonstrated their allegiance by their achievements in college. Considering all of this, in order to have a comprehensive high school, the smaller districts must be willing to readjust their boundaries to provide their students with the quality of education that they need.² It would seem that to provide the best education for the students of today, the high school should not be less than 500 students.

Conclusion

It seems that the best of all possible solutions for the small schools would be for them to consolidate into larger units. This would give them more money to operate their schools, and apparently then this would make it easier to offer a wider course of study. In some locales this consolidation might not be possible due to the sparsely populated areas, or the unusual terrain which would prohibit lengthy transportation routes. Schools

¹ Donald M. Prince, "The Small High School: Distinction or Extinction?" Illinois Association of Secondary School Principals, (Winter 1963-64), p. 8.

²Ibid.

in these areas will always have to be maintained at greater costs. The small schools, except for those whose geographical location makes it impossible, should not fall below 500 enrollment in the high school.

CHAPTER II

DROPOUTS

Causes for Dropouts

The curriculum of a small high school should be broad enough to accomodate the potential dropouts who otherwise leave school because it is not providing a meaningful experience for them. The precise reason why any student leaves school may not be readily discernible; however, dropouts do have certain characteristics which are applicable to them as a group.

According to Donald Janson, children of migrant workers, who numbered more than 100,000 in 1962, are frequent dropouts. The nature of the employment of the migrant worker requires that he move from community to community, from state to state. This circumstance makes the child of the migrant worker one of the most deprived in the country. The dropouts are educable, as shown in a survey made by the United States Department of Labor in 1962. This survey revealed that 70% of the dropouts had intelligence scores above 90.¹

Minority groups also contribute large numbers to the dropout group. The apparent reason for this is that members

¹John K. Norton, Changing Demands on Education and Their Fiscal Implications, (Washington, D. C.: National Committee for Support of the Public Schools, National Education Association, 1963), p. 56.

of the minority groups frequently have several of the characteristics which can be attributed to the dropouts as a whole. One such characteristic is retarded reading ability. Since reading is a fundamental skill, a deficiency in this area can easily be regarded as a significant reason for leaving school. Dropouts frequently come from a lower socio-economic background, and minority groups are well represented in this category.¹

A state-wide survey of dropouts by the Illinois Office of Public Instruction in 1962 revealed the following:

Approximately 54 percent of the students who took more than eight years to finish elementary school became high school dropouts.

Only 2 percent of the students who took college preparatory courses became dropouts, while 38 percent of those who studied general curriculum left high school before graduating.

About 60 percent of the students who were absent more than 25 days out of the normal 185-day school year became dropouts.

Over 30 percent of the dropouts occurred before the end of the freshman year; another 30 percent occurred during the sophomore year.

High school graduates held more part-time jobs than dropouts held.

Dropouts had more frequent access to family cars and owned more cars than did those who graduated. Students who finished high school engaged in more extracurricular activities than did dropouts. A large percentage of dropouts came from broken homes.²

In an article by G. C. Matzner and B. G. McClard in 1963, it was noted that about one tenth of our students come from what they termed an undesirable home. This study was made in

¹Ibid., pp. 57-58.

²Ibid., p. 59.

the West Central Illinois Schools and the definition of an undesirable home was a home where both parents are living, but some circumstances exist that would lead to undesirable situations.

From undesirable homes nearly three times as many pupils appeared in the lowest one third as appeared in the top one third. It would seem that undesirable homes tend to have a more adverse effect on the performance of pupils in school than do broken homes.¹

It would appear that the student who comes from an undesirable environment is a potential dropout.

Problems of a Dropout

The student who drops out of school is faced with the problem of finding employment. In 1960, the United States Department of Labor found that about 3/4 of the males who drop out of school are without jobs, and about 2/3 of the girls who are not married at the time they leave school are without jobs. Most of the students who drop out of school must seek employment as unskilled laborers. Statistics reveal that they will be unemployed for a longer period of time than the students who finish school.²

In the past, the dropout has faced stiff employment competition which will increase in the future. The number of

¹G. C. Matzner and B. G. McClard, "Are High School Curricula Meeting Student Needs?", Illinois Education, (May, 1963), p. 384.

²Norton, op. cit., p. 59.

people who will reach the age of 18 by 1965 will be 3.8 million, an increase of 50% in 5 years for that age. This rate of increase is expected to continue through the year 1970,¹ adding to an already large number of persons who will be seeking permanent employment for the first time. In addition to facing this ever increasing competition, the dropout is also expected to work for less money.

In a study made by Herman P. Miller in 1960, it was found that an individual's earning power is directly related to the extent of his education.

In Miller's graph it shows the total estimated earnings of a person from age 18 until death. The ones who have an education of less than 8 years will have an estimated earning of \$129,764. The ones who have completed 8 years of elementary school will have an estimated earning of \$181,695. The people who attend high school for from 1 to 3 years have an estimated earning of \$211,193. However, if they finished high school, they would have an estimated earning power of \$257,557. The ones attending college from 1 to 3 years will have an estimated earning of \$315,504. Then the college graduates and above 4 years of college will have an earning power of \$435,242.

Even with the cost of further education, the graph reveals that the individual's earning power would be considerably

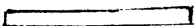
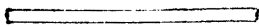
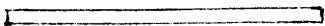
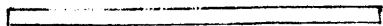
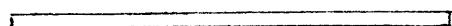
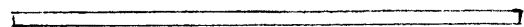
¹Ibid., p. 61.

increased over a period of time.

GRAPH A¹

Estimated Earnings

Estimated Earnings from Age 18 to Death and Years of Schooling Completed

Elementary		
Less than 8 years		\$129,764
8 years		\$181,695
High School		
1-3 years		\$211,193
4 years		\$257,557
College		
1-3 years		\$315,504
4 years or more		\$435,242

Reasons for Holding the Dropouts

Eugene L. Swearingen² lists some other aspects of education that are often overlooked. For example, there is a value in having educated civic workers, mothers and neighbors. Increased education could also improve racial relations, resulting in a reduction in crime and poverty and an increase in the rate of growth for our society.

¹Norton, op. cit., p. 21.

²Ibid., p. 31.

If the dropouts could be interested or encouraged to remain or return to school, then the enrollments of many schools would be increased. For these reasons and certainly many more, the school should try to make an effort to get the dropout back into school and to keep the potential dropout from leaving. High school for most of these students is very distasteful. They leave the school not for jobs, but simply because, for the most part, they do not like it. The high school has not met their needs. They do not feel that they belong. This might stem from the need of "guidance counselors and course of study to meet the widely varying capacity and goals of high school pupils today".¹

Currently, few schools satisfy the needs of students with low intelligence scores. It should be remembered, however, that all dropouts do not necessarily have a low intelligence quotient.² To assist the student who is not going on to college, and the student who might become a dropout, the small school might broaden the programs in fields where reading and mathematics are not quite as essential, such as industrial subjects, home economics subjects, and business subjects.

A problem of the small schools has for some time been that they have tried to pour all of their students into the same mold. The same has been expected of all students regardless

¹Norton, op. cit., p. 56.

²Ibid., p. 57.

of ability or home environment. It seems foolish to expect the same home work from students who have ideal study situations and from the students who cannot study at home. There are many students of the latter type who cannot do home work assignments. There are many who work while others are from such large families and crowded situations that they could not study even if they wanted to. This type of student is bound to become discouraged if he is marked down because his assignments are not as complete as the other students that have the better study situations.

Conclusion

There is nothing specific that identifies a dropout. As has been noted in this chapter, there are identifying characteristics for dropouts, but there would always be exceptions to these characteristics. Perhaps by pointing out some of the pitfalls of a dropout and some of the advantages of remaining in school, a part of the potential dropouts could be spared a lot of later difficulty. The schools must consider a different overall view for students than is present in the curriculum at this time.

CHAPTER III

PROBLEMS AND INFLUENCES FOR A BROADER COURSE OF STUDY

Most small schools could benefit by putting in a broader course of study, especially in the freshman and sophomore years. Apparently there is a need for a counseling and guidance program. This program should include indentifying the gifted and planning their studies so they are equal to their abilities. The program should also permit the poor student an opportunity to do as much as he can. Another use or benefit from this program would be to discover the students who come from the undesirable homes. For the larger group, or the average and slightly above average and below average, there should be opportunities in professional fields. The program should also select the pupils in the lower 30% and see that they do not just mark time.¹

On the basis of these ideas, if these students are to be handled intelligently, there must be more cooperation established among all groups.²

Suggested Course of Study

The number of vocational courses available are numerous,

¹Norton, op. cit., p. 73.

²Ibid.

and precisely which ones should be selected for inclusion in the high school curriculum is difficult to determine. Perhaps a deciding factor would be an analysis of the employment opportunities in the immediate area of the school and some understanding of the apparent principal needs of students. For the school with 500 students or more, however, the following could be a practicable solution: industrial subjects, home economics subjects, and business subjects.

Since the industries more or less prefer to do their own detailed technical training, it falls to the schools then to provide the basic understandings of many fields of work, thus enabling the students to better choose the one of their liking and ability.

In grade nine, subjects could be drafting, graphic arts, electricity, metal, wood, and plastics all offered for six week periods. In grade ten one needs to become more specific and more time spent on drafting for 12 weeks, graphic arts for six weeks, and machine wood working for 18 weeks. For grade eleven, subjects that might require a little more maturity could be electricity for 3 weeks, electronics for 12 weeks, auto electricity for 3 weeks, machine metal for 12 weeks, and auto body for 3 weeks. To culminate the subjects for grade twelve then one might choose any one or two of these areas for one semester of work.

CHART A

Suggested Courses for an Industrial Arts Program

Grade Nine

Six Weeks /	Six Weeks /	Six Weeks /	Six Weeks /	Six Weeks /	Six Weeks /
Drafting	Graphic Arts	Electricity	Metal	Wood	Plastics

Grade Ten

Twelve Weeks /	Six Weeks /	Eighteen Weeks /	
Drafting	Graphic Arts	Machine Wood Working	

Grade Eleven

Three Weeks /	Twelve Weeks /	Three Weeks /	Twelve Weeks /	Three Weeks /
Electricity	Electronics	Auto Electricity	Machine Metal	Auto Body

Grade Twelve

Choice of any one or two of these areas for one semester each:
Auto Mechanics-Drafting-Graphic Arts-Metal Working-Electronics

These industrial subjects would primarily be developed for an introduction and smattering of important ideas in each course. Aptitudes would be discovered early, and by grade twelve, one would be able to guide a person into the course of choice and aptitude for which he is best suited.

These courses would be set up particularly for boys. For a course outline for these industrial subjects see Appendix A. Appendix A is more extensive and complete because that proposed program is going to be put into use in the St. Elmo Community Unit High School during the 1964-65 school year.

A suggested outline for home economics could include the following: for grade nine, 12 weeks for hair styling, 12 weeks for clothes design, 6 weeks for shopping, and 6 weeks cooking. Grade ten could be 12 weeks for home repairs, 6 weeks for house planning, 12 weeks for sewing, and 6 weeks for budgeting. Grade eleven begins with eighteen weeks for clerks or waitresses, 6 weeks for home nursing and 12 weeks for family living. A more concentrated study in any two of these areas could be pursued in grade twelve. The above subjects could be designed on ability levels, also.

CHART B

Suggested Courses for a Home Economics Program

Grade Nine

Twelve Weeks /	Twelve Weeks /	Six Weeks /	Six Weeks /
Hair Styling	Clothes Design	Shopping	Cooking

Grade Ten

Twelve Weeks /	Six Weeks /	Twelve Weeks /	Six Weeks /
Home Repairs	House Planning	Sewing	Budgeting

Grade Eleven

Eighteen Weeks /	Six Weeks /	Twelve Weeks /
Clerks or Waitresses	Home Nursing	Family Living

Grade Twelve

Choice of any two areas for a more concentrated study.

Home economics subjects, which would be designed primarily for girls, would surely benefit every girl who would be able to enroll in the courses, regardless of whether she planned to use them as a basis for a major of home economics in college, a means for employment upon graduation from high school or simply as a homemaker. This part of the curriculum should be developed to interest and entice all who could work the courses into their schedules after appropriate consultation with the counselor.

For a further definition and development of these subjects, see Appendix B.

There have been suggested subjects for boys and girls so, appropriately, business subjects could include both sexes. For suggested courses in grade nine there could be 18 weeks for personal typing and 18 weeks for record keeping. Grade ten could be different in that here could be offered a full 36 weeks in Typing I, Bookkeeping I, and Shorthand I. Grade eleven could be the extension of these in 36 weeks of Bookkeeping II, Shorthand II and use of clerical machines, and Typing II. Grade twelve would put all one had learned previously into actual practice and be office practice for 36 weeks. These business subjects could be valuable during high school note taking, typing of themes and keeping a budget.

CHART C

Suggested Courses for a Business Program

Grade Nine

Eighteen Weeks
Personal Typing

Eighteen Weeks
Record Keeping

Grade Ten

Thirty-Six Weeks
Typing I

Thirty-Six Weeks
Bookkeeping I

Thirty-Six Weeks
Shorthand I

Grade Eleven

Thirty-Six Weeks
Bookkeeping II

Thirty-Six Weeks
Shorthand II
Use of Clerical
Machines

Thirty-Six Weeks
Typing II

Grade Twelve

Thirty-Six Weeks
Office Practice

Business subjects should be available to both boys and girls. With the offerings recommended, a person whose interest was in business or commercial subjects would certainly be able to select appropriate courses. The program is broad enough to include courses beneficial to those who simply wish to become more adept at keeping their personal records.

An additional asset obtained from each of these subject groupings would be providing the student with a means of earning spending money, through increased learning and ability, to

be used while still in high school or later at college.

For a course outline of these business subjects see Appendix C.

Courses Available and Required

The curriculum should be developed for each student so that there will not be a stigma attached to a pupil's taking vocational courses. If courses are outlined as college preparatory, then the student's parents often will try to have their child take courses he does not want or have the ability to handle simply as a matter of prestige.¹ This does not imply that a student who has ability should not be allowed to take vocational subjects as many of the college bound students might find part of the courses helpful in their college work.

The curriculum, that is available to any student, should include four years of English, four years of mathematics, four years of science, and four years of social studies. This does not imply that every student will be required to enroll in each of these subjects, but for students capable and wanting them, they should be available.²

Subjects in the curriculum which should be required of all students are: four years of English, one year of mathematics, two years of social studies, and at least one year of

¹Conant, op. cit., p. 47.

²Harold C. Hand, "Are College-Prep Programs Adequate?", Illinois Education, (November, 1961), p. 118.

science. Additional subjects should be required as needed to provide the student with sufficient credit for graduation. Requiring specific courses of all students does not imply that everyone would be forced to compete at the same level in all subjects.¹

Three levels of classes should be offered for all subjects to accommodate the above average, the average, and the below average student. This would permit the student who is high in ability in one area, for example English, but low in another area, mathematics, to take the advanced English course and the less difficult mathematics class.

Influences for College Attendance

Students who have the ability to continue their education in college should be identified early and encouraged to pursue a course of study that suits their needs and develops their talents to the maximum. Too often, the gifted student fails to enter college.

In a nation-wide survey of the 1956 to 1960 seniors, it was shown that plans for attending college depended to a large extent on the following factors.

1. Father's occupation. Of those whose fathers were white collar workers, 66 percent were planning to go to college as compared with 37 percent whose fathers were manual or service workers and 34 percent whose fathers were farm workers.

¹Conant, op. cit., p. 47.

2. Family income. Of the 1959-60 high school seniors, 68 percent of those whose family income was \$7,500 or over planned to go to college as compared with 52 percent of those whose family income was \$5,000-\$7,499; 40 percent, when it was \$3,000-\$4,999; and 23 percent when it was under \$3,000.
3. Sex. More boys than girls indicated their intention to enroll in college, despite a larger number of girls than boys among high school seniors in 1959-60.
4. Educational status of parents. Parents' education plays a decisive role, according to the U. S. Bureau of the Census:
 The proportion of sons who attended (or completed) college increases dramatically according to the level of schooling completed by their fathers. These proportions ranged from nearly 55 percent of the sons of fathers with a high school diploma (but no college) to 70 percent of the sons of fathers with some college, and 88 percent of the sons of fathers who were college graduates. Fewer than one-fourth of the sons of fathers without a high-school diploma had either graduated from college or had some college attendance.¹

This emphasizes the fact that there must be a continued and even more intensified effort to provide adequate counseling and guidance to these students in order to channel them in the proper direction and to help them find scholarships providing financial aid when it is needed.

Conclusion

For a considerable number of years, the smaller schools have attempted to offer a college preparatory course of study to all students. The result of this practice has often been

¹Norton, op. cit., pp. 70-71.

that educators have had to reluctantly watch less gifted students fall by the wayside and either drop out of school entirely or just barely satisfy the demands of the courses. Even those students who are fortunate enough to complete their schooling under these conditions, very often have little or no idea what they want to do upon graduation. The school should broaden its vocational programs to offer a larger range of courses, so that these students may be helped in deciding upon the type of vocation they should work toward. Thereby they might all have a useful occupation at whatever level their ability might be.

Every student has the right to expect an education that will meet his needs and abilities. The school must be able to prepare the student for college, skilled labor, or semi-skilled labor. There are some people who would only educate the above average students, but this would be a waste, and the resulting unemployment would be a great burden upon the United States. The answer is to educate just as many as possible whether they are above average, average, or below average.

CHAPTER IV

FINANCING A SCHOOL CURRICULUM

Achievements Past and Present

Anyone, who has ever had the experience of attending a one room school house and in later years attending or being in some manner connected with a modern consolidated school, will readily attest to the great strides our nation has made in the development of educational facilities and teaching techniques. Perhaps no other nation, now or ever before, has had the means to educate its citizens in the manner the United States is able to do today. Consolidation, which many educators believe to be panacea for all, is ever increasing. Facilities for students and salaries and working conditions for teachers have been considerably improved in recent years. While one may be justly proud of these accomplishments, there appears to be a limit to how far administrators can go under the present system of school finance.

Despite our obvious accomplishments, there are certain areas which one must look upon with something less than pride. From a national standpoint, one cannot be too proud of the fact that less than 60% of all boys and girls who are now in

¹Sam M. Lambert, "The Case for Federal Support of Education-1961," National Education Association, Washington, D. C., March, 1961, p. 7.

the fifth grade will ever graduate from high school. As was determined in 1955-56 in a study by the U. S. Department of Health, Education and Welfare, Office of Education¹, Illinois, which will graduate 62% of its fifth grade students, can have small reassurance for its only slightly better average, especially when one considers that there exists a highly mobile population, and Illinois will be receiving students from other states.²

Again from a national standpoint, of all the men who took the Armed Forces mental test, a large percent failed to pass it, and 25% failed to pass the selective service tests. In some states the figure was as high as 62%. Illinois, where 24.6% failed the test, ranked thirty-third of the fifty states.³

Ever Increasing Enrollments

There are some educators who believe that there will not be as many students in the late 1960's as there are today.⁴ However, a check of enrollments would reveal that the number of students in our schools is continuing to rise. According to the U. S. Department of Health, Education and Welfare, in the decade of 1950, the school enrollment increased 11,000,000, and in the 60's it will increase another 8,000,000. With the

¹Ibid.

²G. C. Matzner, quoted in lecture in Education 480, January, 1963, Eastern Illinois University.

³Lambert, op. cit., p. 7.

⁴Ibid., p. 10.

expansion of the schools through a kindergarten and a retention of the school dropouts, one could expect an even higher rate of increase of students in the schools in the late 60's. Even if one were to see a dropping off of students in the lower grades, we could still expect to see the cost of education going up, as it is estimated that it costs more per student in the high school than it does for students in the lower grades.¹

To meet the demands for more students and more class rooms, we will also have to have more teachers. There will have to be about 400,000 new teachers in this decade. However, this is only part of the picture; due to the ones who leave the teaching profession each year, it will take about 1.6 million teachers to fill the gap. This is equivalent to almost the entire teaching personnel of today or about 200,000 per year. This would not be so bad except that the colleges are not producing that many new teachers. They are producing about 129,000 each year, but only about 73% of them are going into teaching.²

The teacher turn-over in some states is much greater than in others. In West Virginia for example, about 3/5 of the teachers must be replaced every 6 years.³ Some fields are harder hit than others, such as physics and chemistry, where only about 60% ever go into teaching.⁴ There is generally a

¹Ibid.

²Ibid.

³Ibid., p. 11.

⁴F. J. Seidner, "Federal Support for Education," The Public Affairs Institute, Washington, D. C., 1959, p. 4.

greater shortage of elementary teachers than high school teachers. This probably stems from the fact that in a great many cases they make less money. Because of this shortage of teachers, there are emergency teachers, or teachers with sub-standard certificates. The standards for teachers also vary from one state to another. For example two years of college is enough for a teaching certificate in 1/4 of the states.¹

While teaching status has increased in most of the states, it is not increasing with other types of employment which require about the same amount of education. Other types of employment can expect to draw greater amounts in future years. Studies made by the National Education Association in 1959 conclude that teacher's salaries should be at least 60% above the present average level "to meet any reasonable estimate of a professional level of compensation."²

Needs Still to be Met

While there is reason to be proud of the building in recent years, and perhaps some communities may even be ahead of student growth, an overall view reveals the picture to be less than optimistic.³ Each year there is a need for more and more class rooms, and, even with the building that has been

¹Ibid.

²Ibid.

³Lambert, op. cit., p. 14.

done, the building programs are falling further and further behind. This can be seen from the number of schools which are running half-day sessions, and from the schools where normal room capacity is greatly exceeded.

In recent years, there has been a great deal of attention given to exceptional students, but there has been little done for the person who is less well endowed. They are the ones who comprise most of the school dropouts. It has been said that the dropouts do not have a skill and do not have the maturity to retain a job. There are almost twice as many such persons who failed to finish high school, who are unemployed, as those who do finish. This is a serious problem today. However, it is not nearly as serious as it will be by 1970. In 1950, there were approximately 8.4 million people from 14 to 17 years of age. In 1970, there will be almost twice that many. It would be cheaper to teach these people a skill or trade at this age than to support them for years after.¹

A Forward Look In Finance

Now is the time to look ahead toward some reasonable answers to our school's problems. It is not believed that schools can expect to receive much more from the state-local tax system that is already steeply regressive. The federal income tax has been more progressive. The federal tax burden,

¹Ibid., p. 15.

as a percent of family income, went up as the family income increased, but the opposite was true of the state-local tax burden.¹

While money is not the only answer to having the best teachers, it can be seen that the school districts that pay the best salaries usually have a smaller turnover in teachers. The students in all parts of our country must be well provided for today. Due to the fact that there exists in the United States a mobile society, the same educational opportunities should await a student in one state as in another. This includes teachers, schools, and curriculum. The education of teachers should be the same, and in this there will have to be an upgrading in a large part of our country. The nation still has a great many small country schools, many of which are not up to date. Some have been in operation more than 50 years and are not providing the equality of education that should be there for the people in their locale.² One must believe that all schools should be large enough to handle the students and made so as to provide the best possible facilities for a well-rounded education. The curriculum should provide a sound basic course of study so that all could have an equal opportunity for work or further education.

These needs seem to justify the use of federal funds for

¹Ibid., p. 24.

²Ibid., p. 15.

meeting the additional cost of education. Since it has been established that a well educated nation is also an economically sound nation, then the federal government should take over some of the responsibility for the public schools. Education is a good investment, but it can no longer be only for community or state; it must be for the nation.

Conclusion

The public schools are going to see an ever increasing cost for the education of its students. This will be due to an increased number of students, teachers, and buildings. There are some areas that have already felt this growth and are attempting to meet the extra cost; however, it is almost an impossible task with only state and local funds to operate the school. If the school is to grow and develop as it should, it will need further help from the federal government, but this does not mean the school will not need local and state aid, as it will need the combined efforts of all.

CHAPTER V

CONCLUSION

The intellectual, moral, ethical and economic future of our society is totally interwoven with the educational process. Although the system of education available in the United States is perhaps unequalled anywhere in the world, it still must make great strides in the next decade if we are to meet the challenge spawned by the democratic process.

Perhaps the greatest single need in education is to depart from the traditional community or state concept of education and adopt a broader view which envisions a comprehensive education for all students regardless of geographical location or socio-economic origin. The mobility of our society demands that adequate educational facilities await the student wherever he goes in the United States.

To implement such a program will require concessions from local school administrators, an increase in the number of qualified teachers, and a far broader method of financing education than is now available to most schools.

From a practical standpoint, it is clear that the student who attends the small, inadequately staffed school, will not likely encounter the kind of curriculum which will enable him to become a useful citizen, functioning at his maximum ability.

It is necessary that a reorganization of educational facilities occur in areas where only minimal opportunities can be offered to students.

Any curriculum changes designed to offer an equal opportunity to all students must take into account the varied ability of different students and make provisions for allowing the student to progress at his own level of attainment. Special attention must be devoted to both the superior student and the student who is a potential dropout because of home environment or other factors which make his pursuit of higher learning more difficult. No student who is willing to attend a school should be wasted and cast upon the labor market ill-equipped to compete with his fellow citizens for even the barest necessities. Regardless of ability, suitable vocational education must be provided to make all students potentially useful citizens, capable of caring for themselves and of making a contribution, however small, to our society.

Because of the ever increasing demands in our society for highly skilled personnel, our educational system must provide a means of advancing even further the already advanced student, encouraging him to attend college after graduation from high school.

The method of establishing high schools of a suitable size, providing for students of varied ability by offering a broader curriculum, must seek adequate financing as a basis for progress.

This source of funds, apparently, can only be supplied by a continued use of state and local revenues augmented by federal funds.

APPENDIX A

SUGGESTED COURSE OUTLINE
FOR AN
INDUSTRIAL ARTS PROGRAM

FRESHMEN

DRAFTING

- I. Freehand Sketching:
 - a. Techniques for sketching lines, arcs, circles
 - b. Techniques for sketching isometric and non-isometric circles and arcs
- II. Use of drawing instruments:
 - a. Pencil points and how to make them
 - b. Use of T square and various triangles
 - c. Use and care of drawing instruments
 - d. Triangular scale (architects) and how to use its scales
- III. Project drawing:
 - a. Woodwork
 - b. Metalwork
 - c. Electrical work
- IV. Lettering and dimensioning drawings
 - a. Vertical and inclined letters
 - b. Vertical and inclined numerals and fractions
 - c. Rules for dimensioning
 - d. Application of accepted dimensioning standards
- V. Blueprint reading:
- VI. Occupations in drafting:
 - a. Numbers and kinds of workers
 - b. Types of jobs
 - c. Opportunities

- d. Wages and working conditions
- e. Kinds of manufacturing industries which employ draftsmen

FRESHMEN

GRAPHIC ARTS

- I. Relief printing:
 - a. Kinds and style of types
 - b. Type case layout
 - c. Kinds and uses of various spacing materials
 - d. Techniques of composition (by hand or machine)
 - e. Handling type
 - f. Taking and reading a proof
 - g. Measuring type matter
 - h. Techniques of imposition
 - i. Make ready on the press and getting a good impression
 - j. Operating the press
- II. Studying the various occupations in Graphic Arts
 - a. Types of jobs
 - b. Job opportunities
 - c. Wages and working conditions

FRESHMEN
ELECTRICITY

- I. Simple wiring circuits:
 - a. Kinds and sizes of wires
 - b. Structure of a socket and bulb
 - c. Results of series and parallel connections of bulbs
 - d. General nature of electricity
 - e. Nature of conductors and insulators
- II. Magnetism:
 - a. The properties of permanent magnets and their magnetic fields
 - b. The properties of electromagnets and their magnetic fields
 - c. How electricity rings a bell
- III. Direct current:
 - a. Structure of a dry cell
 - b. How a cell produces electricity
 - c. How a storage battery produces electricity
 - d. How to charge a storage battery
 - e. The meaning of the volt
 - f. The meaning of the ampere
 - g. How electric current is controlled
- IV. Alternating current:
 - a. The meaning of alternating current
 - b. How alternating current is produced
 - c. How electricity produces motion
 - d. How electricity produces heat

- e. How electricity produces light
- f. How the transformer works
- g. How the fluorescent lamp works

V. Occupational information:

- a. Fields of electrical occupations
- b. Types of jobs
- c. Job opportunities
- d. Wages and working conditions

FRESHMEN
METALWORKING

- I. Designing a project:
 - a. Study principles and elements of design
 - b. Learn about working qualities of metal that effect design
- II. Planning:
 - a. Bill of material
 - b. Plan of procedure
- III. Measuring:
 - a. Measure and divide spaces with a rule
 - b. Measure with inside calipers
 - c. Measure with outside calipers
 - d. Measure with micrometers
 - e. Measure angles with protractor
- IV. Layout:
 - a. Making a layout on metal
- V. Cutting:
 - a. With hand tools, including hack saw, cold chisel, and tin snips
- VI. Drilling:
 - a. Drilling holes with hand drill
- VII. Bending and twisting metal:
 - a. By hand when cold
 - b. By hand when heated

VIII. Smoothing metal:

- a. With files
- b. With abrasive materials

IX. Occupational information:

- a. Fields of metalworking
- b. Types of jobs
- c. Opportunities
- d. Wages and working conditions

FRESHMEN
WOODWORKING

- I. Designing:
 - a. Study methods of selecting and applying acceptable design
 - b. Read and interpret a working drawing
 - c. Learn types of joints and their uses
- II. Planning:
 - a. Calculate cost of materials for a project
 - b. Work out a plan of procedure
- III. Layout:
 - a. Measuring stock to rough length
 - b. Make template and transfer to stock
- IV. Checking workmanship:
 - a. Test for squareness with try square and framing square
 - b. Test for a true surface with a straight edge
 - c. Check layout
 - d. Check measurement
- V. Woodworking planes:
 - a. Block plane
 1. adjustments
 2. how to use and where
 - b. Jack plane
 1. adjustments
 2. how to use
- VI. Sawing:
 - a. Intended purpose and use of different types of saws (cross-cut, rip, miter, etc.)

VII. Fastening, Assembly, and Application of Hardware:

- a. Fastening
 - 1. Types and sizes of nails and wood screws
 - 2. Other types of wood fasteners
 - 3. Types, uses and application of wood glue
- b. Assembly
 - 1. assemble parts of projects with hand screws, bar, and C clamps
 - 2. final assembly of project
- c. Application of hardware
 - 1. selecting, fitting, and application of cabinet hardware

VIII. Preparing for finish and finishing:

- a. Preparation of wood surfaces for different types of finishes
- b. Preparation and application of different types of finishes

IX. Occupational Information:

- a. Employment in woodworking
- b. Salaries and working conditions

FRESHMEN
PLASTICS

- I. Designing:
 - a. Elements of good design
- II. Planning:
 - a. Bill of material
 - b. Plan of procedure
- III. Layout and measuring:
 - a. Using rules and instruments to measure
 - b. Making a layout on plastic
- IV. Cutting:
 - a. Sawing
 - 1. back saw
 - 2. hack saw
 - 3. coping saw
 - 4. jig saw
 - b. Drilling
 - 1. hand drill
 - c. Planing and jointing edges
 - d. Shaping edges
- V. Shaping:
 - a. Using heat to shape by hand
 - b. Using heat to shape with jigs
- VI. Assembling:
 - a. Solvents and cements
 - b. Self tapping and drive screws

VII. Finishing:

- a. Hand polishing
- b. Machine buffing

VIII. Occupational information:

- a. Fields of plastic occupations
- b. Types of jobs
- c. Job opportunities
- d. Wages and working conditions

SOPHOMORE

DRAFTING

I. Working Drawings-Three Views:

- a. Introduction
- b. Methods of projecting
- c. Missing view problems
- d. Missing lines problems
- e. Chamfer
- f. Dimensioning practice
- g. Intersecting rounds
- h. Intersecting fillets
- i. Counterbored holes
- j. Castings
- k. Finished surfaces
- l. Finish marks
- m. Finish allowance
- n. Cored holes
- o. Dovetails and dovetail slides
- p. Drills, letter and wire gage size
- q. Reamed holes
- r. Spotface
- s. T-Slot
- t. Scale drawings
- u. Indicating scale

II. Blueprint Reading (machine)

- a. Actual practice in machine blueprint reading

SOPHOMORE

GRAPHIC ARTS

I. Slug and Rule Cutter:

- a. Cutting slugs to the correct length
- b. Cutting rule to the correct length

II. Paper Cutter:

- a. Correct procedure in operating the paper cutter
- b. Cutting paper to the correct dimensions

III. Practice:

- a. Handling type
- b. Measuring type matter
- c. Techniques of imposition

IV. Projects:

- a. Position a form for lock up
- b. Plane and lock up a form
- c. Put chase in press
- d. Mark out type form
- e. Feed press
- f. To run off jobs
- g. Additional projects can be small printing jobs for the school such as (tickets, attendance sheets, one page programs, and printing of letter heads)

SOPHOMORE

WOODWORKING WITH MACHINES

- I. Related Information:
 - a. The importance of wood products in everyday living
 - b. How lumber and plywood are graded and measured
 - c. Some hardwoods used for cabinet making
- II. Furniture Design and Planning:
 - a. Some period and contemporary designs of furniture
 - b. Some principles of furniture design
 - c. Selecting a project and estimating cost
- III. Woodworking Machines-Construction Details:
 - a. Some power woodworking machines
 - b. Some joints used in woodworking
 - c. Some construction details
- IV. Machining Stock to Finished Dimensions:
 - a. Procedures for squaring stock on woodworking machines
 - b. The wood jointer
 - c. How to use the wood jointer
 - d. The wood surfacer
 - e. How to use the wood surfacer
 - f. The variety saw
 - g. How to use the variety saw
 - h. How to cut joints on the variety saw
 - i. The radial saw
 - j. How to use the radial saw

- k. The Hollow Chisel mortiser
- l. How to use the hollow chisel mortiser

V. Cutting Stock to irregular shapes:

- a. The bandsaw
- b. How to use the band saw
- c. The shaper
- d. How to use the shaper
- e. The wood turning lathe
- f. How to use the wood turning lathe
- g. How to use the hand router
- h. How to use the electric saber saw

VI. Assembling Stock:

- a. Use of wood screws and nails
- b. Types of wood glues and their uses
- c. How to prepare and assemble stock with glue
- d. Cabinet hardware and other wood fasteners

VII. Preparing and Finishing woods:

- a. How to prepare machined wood surfaces for finishing
- b. Some materials used for finishing woods
- c. The electric sanders
- d. How to use the electric sanders
- e. Procedures in finishing woods

JUNIOR
ELECTRICITY

- I. Residential Wiring:
 - a. Wiring systems and materials
 1. knob and tube
 2. flexible armored cable or BX
 3. non-metallic sheather cable
 4. rigid and thin-wall conduit
 5. national electrical code
 6. electrical wiring installation
 7. grounding
 8. fuses and circuit breakers
 9. wiring symbols
 10. wiring materials
- II. The Use of Electrical Service:
 - a. Selection and use of light bulbs
 - b. Reading the watt-hour meter
 - c. Safety precautions in the use of electricity
- III. Wiring Methods:
 - a. The service entrance
 - b. Plan your installation
 - c. Installing boxes, switches and fixtures
 1. octagon box, round box, square box, gang boxes
 2. single pole switch, three way switch, receptacles
 3. hanging fixtures
- IV. AC and DC Current:
 - a. Alternating current
 - b. Direct current
 - c. Single phase
 - d. Three phase
- V. Occupational Information:
 - a. General electrician
 - b. Electrical engineer

JUNIOR

ELECTRONICS

RADIO

- I. Construct a radio from a schematic drawing and pictorial diagram:
- II. Identify common radio parts such as resistors, condensers, and tubes:
- III. Necessary electrical soldering in radio construction:
- IV. Interpret common radio symbols:
- V. Circuit analysis:
 - a. Checking for opens, shorts, grounds, tracing wires, and continuity with ohmmeter, output meter, and oscilloscope
 - b. Aligning signal generator
 - c. Testing tubes
- VI. Project building:
 - a. Broadcast station
 - b. Code practice oscillator
 - c. Audio amplifier
 - d. Signal tracer
 - e. One-tube super-regenerative radio
- VII. Occupational information:

JUNIOR

AUTO ELECTRICITY

- I. The Electrical System:
 - a. Battery
 - 1. parts of the battery
 - 2. electrolyte
 - 3. capacity
 - 4. factors affecting battery life
 - 5. service procedures
 - b. The starting motor circuit
 - 1. starting motor drives
 - 2. the starting switch
 - 3. the starting motor service
 - c. The charging circuit
 - 1. the generator
 - 2. the regulator
 - 3. the alternators
 - d. Lighting and accessory circuits
 - 1. lights
 - a. service procedure
 - e. The ignition circuit
 - 1. induction coil
 - 2. ignition distributor
 - 3. spark plugs

JUNIOR
METALWORK

I. Metalworking lathe:

- a. Getting acquainted with the lathe
 - 1. cleaning the lathe
 - 2. oiling the lathe
 - 3. putting lathe through various operations
- b. Cutting speed and RPM
 - 1. surface speed minute
 - 2. quick change gear box
 - 3. back gear
 - 4. cone pulley
- c. Feeds and depth of cut
 - 1. distance the cutting tool is moved
 - 2. automatic feed
 - 3. distance the cutting tool is moved into work
- d. Lathe chucks
 - 1. four jaw independent chuck
 - 2. three-jaw universal chuck
 - 3. collet chucks
- e. Chucking
 - 1. placing work in various chucks
- f. Lathe cutting tools
 - 1. tool bits
 - 2. high-speed steel
 - 3. high-carbon steel
- g. Toolholders
 - 1. left-hand toolholder
 - 2. right-hand toolholder
 - 3. straight toolholder
- h. Grinding lathe tools
 - 1. face
 - 2. flank
 - 3. nose angle
 - 4. nose radius
 - 5. side clearance
 - 6. front clearance angle
 - 7. side rake angle
 - 8. back rake angle
 - 9. right-hand tool bit
 - 10. left-hand tool bit

- i. Setting the cutting tool
 - 1. tool post
 - 2. tool holder
 - 3. tool bit
 - 4. compound rest
 - 5. lathe center

- j. Facing
 - 1. setting the cutting tool
 - 2. carriage lock

- k. Centerdrilling
 - 1. drill chuck
 - 2. tailstock
 - 3. centerdrill

- l. Faceplate

- m. Lathe centers
 - 1. headstock center
 - 2. tailstock center
 - 3. spindle holes
 - 4. alignment

- n. Lathe dogs

- o. Putting work between centers
 - 1. center drilling
 - 2. faceplate
 - 3. lathe dog
 - 4. placing work between centers
 - 5. tail stock

- p. Straight turning

- q. Taper turning

- r. Drilling and boring

- s. Knurling
 - 1. setting of the knurling tool
 - 2. speed

- t. Projects to be made on the metal lathe
 - 1. straight turning
 - 2. taper turning
 - 3. cutting threads
 - 4. drilling
 - 5. boring

- u. A major project to be made at the decision of the instructor

II. Metalworking shaper:

- a. Vise position
- b. Table elevation
- c. Length of stroke
- d. Amount of feed
- e. Depth of cut
- f. Number of strokes per minute
- g. Project to be selected by instructor

III. Metalworking milling machine: (horizontal and vertical)

- a. Getting acquainted with milling machine
 1. spindle
 2. overarm
 3. table
 4. saddle
 5. milling cutters
 6. rpm
- b. Projects to be accomplished
 1. cutting flat work
 2. cutting slots
 3. cutting grooves
 4. cutting keyways
- c. A major project to be selected by the instructor

IV. Welding:

- a. Temperature range
- b. Sizes of welding rods
- c. Thickness of metal
- d. Kinds of metal
- e. Kinds of welding rods
- f. Welding helmets
- g. Chipping goggles
- h. Chipping hammer
- i. Flat welding
- j. Vertical welding
- k. Overhead welding
- l. Spot welding

SENIOR
ELECTRONICS

Only Seniors who have had Industrial Arts II and III can do the following:

- A. Use the Signal Generator
- B. Use the Tube Tester
- C. Use the Oscilloscope
- D. Use the Vacuum Tube Voltmeter
- E. Use the Ohms-Volt Meter

- I. Projects to be built:
 - a. Secret Listener
 - b. Photoelectric Control
 - c. Electronic Timer
 - d. Four-Tube Tuned Radio
 - e. Five-Tube Super-Heterodyne Radio
 - f. Any additional projects will be selected according to the student's ability

GRAPHIC ARTS

Only Seniors who had Industrial Arts I and II can do the following:

- A. Learn how to make up pages
- B. Learn how to set a rule form
- C. Position furniture
- D. Lock up a rule border
- E. Set a job with a border
- F. Put chase in press
- G. Ink up press
- H. To feed a press
- I. How to set a display
- J. How to set type for poster printing
- K. Print posters on poster press

I. Projects:

- a. Projects will be selected according to the student's ability

DRAFTING

Only Seniors who have had Industrial Arts I and II can do the following:

- A. Sheetmetal layout and development
- B. Perspective drawings
- C. Architectural drafting

ADVANCE METAL WORK

Only Seniors who have had Industrial Arts I, II, and III will use the following machines in advance metalwork:

- A. Metal lathe
- B. Metal shaper
- C. Milling machine
- D. Welders

I. Projects:

- a. Projects will be selected according to the student's ability

ADVANCE MACHINE WOODWORK

Only Seniors who have had Industrial Arts I, and II will use the following machines in advance machine woodwork:

- A. Table saw
- B. Radial saw
- C. Jointer
- D. Surfacer
- E. Band saw

- F. Wood lathe
- G. Shaper
- H. Router
- I. Belt sanders

I. Projects:

- a. Projects will be selected according to the student's ability

AUTO MECHANICS

Only Seniors who have had Industrial Arts III can do the following:

- A. Learn how to use the compression tester in testing individual cylinder compression of gasoline engines
- B. Learn how to use the cell tester in checking batteries
- C. Learn how to use the powerlite in timing an engine
- D. Learn how to use the growler in checking generators
- E. Learn how to use the cam angle-R.P.M. tester in checking engine speeds, cam angle and distributor condition on all 6 and 12 volt battery ignition engines
- F. Learn how to use the combustion analyzer in determining air-fuel ratio
- G. Learn how to use the coil-condenser-ignition tester in measuring ignition current at each plug for shorts, resistance and open circuits in distributor caps, ignition wiring and terminals
- H. Learn how to use the spark plug tester for checking spark plugs
- I. Learn how to use the wheel balancer in balancing wheels
- J. Projects
 - 1. tune auto engines
 - 2. minor overhaul of ignition and fuel systems
 - 3. balance wheels
 - 4. do body work

APPENDIX B

SUGGESTED COURSE OUTLINE
FOR A
HOME ECONOMICS PROGRAM

Curriculum for Girls

The girls of the small high school should have the home economics department enlarged so as to interest more girls. This department could have its course of study divided up as follows.

During their freshmen year they might take the following subjects, even the girls who do go on to college might take them as electives, as they would cover most of the phases of actual home making.

- | | |
|----------------|--|
| Hair Styling | 1. The fixing of one's hair, so that it best suits her personal appearance should be one of the first subjects in this course. A girl could determine here if she would like to become a beautician. |
| Clothes Design | 2. The designing of clothes would have a good many possibilities. Some may have the ability to draw and this could lead to a vocation in itself. |
| Shopping | 3. Every girl should know how to shop and to buy wisely. This would ease household management. |
| Cooking | 4. They should be given a chance to plan out and prepare all kinds of meals. |

During their sophomore year they should be offered the following course of study.

- | | |
|--------------|---|
| Home Repairs | 1. This would consist of simple electrical repairs, an understanding of an electrical switch box and furniture repairs. |
|--------------|---|

- | | |
|----------------|---|
| House Planning | 2. They should be able to draw and lay out to scale the house they plan to live in. |
| Budgeting | 3. Everyone should have a flexible budget according to his or her income. |
| Sewing | 4. While everyone could not become an expert seamstress, it is conceivable that they could all benefit from this. |

During their Junior year they might take the following courses.

- | | |
|----------------------------|---|
| Waitress | 1. Since a good many of our girls go to work in cafes, this could be a help to them, as well as the ones who will use it only in their homes. |
| Home Nursing | 2. Everyone should be prepared to care for the sick, since life usually offers the unexpected. |
| Marriage and Family Living | 3. They should know how to plan a marriage, but it should not end here, this should include a complete course and be open to both boys and girls. |

During their senior year they might pick two of the areas for a concentrated study for a future vocation. They should take trips to household manufacture companies, butcher shops, and other places that they will be buying from. This should help them to better understand what is really the best buy for their money.

APPENDIX C

SUGGESTED COURSE OUTLINE
FOR A
BUSINESS PROGRAM

Curriculum for Boys or Girls

The commercial program should be broadened to take in the new machines that are now being used in the world of business. To accomplish this the school could have the following course of study.

Personal Typing and
Record Keeping

1. These would be offered for one year, for a half year each, for the students who do not plan on a business career. They might use them just for their own use.

Typing I, Shorthand I
or Bookkeeping I

2. These would be offered for a semester each during the sophomore year.

Typing II, Shorthand II,
Use of Clerical Machines
or Bookkeeping II

3. These would be offered during their junior year for a semester each.

Actual Office Practice

4. This course would be offered their senior year and would make use of all of their commercial subjects.

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