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Music Students in Academic Subjects

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MUSIC STUDENTS IN ACADEMIC SUBJECTS

By
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A COMPARATIVE STUDY OF GRADES
MADE BY MUSIC STUDENTS
IN OTHER ACADEMIC SUBJECTS
AT THE HIGH SCHOOL LEVEL

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PREFACE

For some time music teachers in high schools have been told that students who maintain good grades in music are seldom good at anything else. It was this challenge that prompted the present study - not with any idea of proving that music students are better or worse than students in any other academic subjects, but rather to ascertain just how music students stand in their other subjects.

I wish here to express my thanks to Mrs. Mary Spiegel for assistance in making available the grades upon which this study is based, and also to Dr. Irvin T. Shultz for his kindly aid in the preparation of this dissertation.

H. E. W.

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A COMPARATIVE STUDY OF GRADES MADE BY MUSIC STUDENTS IN OTHER ACADEMIC SUBJECTS AT THE HIGH SCHOOL LEVEL

CHAPTER I

INTRODUCTION

PROBLEM.

This study was undertaken in an effort to answer the question - What relation exists between grades in Music and the grades made by the same students in other Academic subjects?[1]

For the purpose of the present study the grades made by four hundred students at the Charles E. Emmerich Manual Training High School in Indianapolis, Indiana, as shown by teachers' marks for five consecutive years, were taken in this manner:- the last two grades made in each Academic

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[1] In the states of New York and Pennsylvania (and probably others by now) music is required in the training of all Grade and High School teachers "as any other academic subject."

subject taken in the senior year were averaged and compared with the last two grades (similarly averaged) in some music class - Harmony, Band, Orchestra or Chorus. The students were seniors taken in alphabetical order from the school records of the past five years, and comprise all who took music in their senior year during that period.

LIMITATIONS OF THE STUDY.

Inasmuch as music is graded by the same symbols as are the other subjects offered at the Emmerich Manual Training High School in Indianapolis (which system does not hold in the other Indianapolis High Schools) the present study is confined to graduates of that school. Only grades of the past five years were taken, since the present schedule of classes has been operative for that length of time.

METHOD.

Though the grades were available in all the subjects offered by the school, it seemed best to consider only English, History, and Mathematics, since only these three subjects were common to the records of all the music students. There was no selection of Senior music students (except in a few irregular cases where one or more of these three academic subjects was not included in the record) inasmuch as natural processes had eliminated any failures in the music subjects.

It should be explained here that Music subjects in this school are entirely elective, whereas English - and to some

extent History and Mathematics - are required subjects. This will undoubtedly account for the relatively higher grades made in Music, as well as the absence of grades at the lower levels in this subject, as shown by the graphs and tables.

As the teachers' grades were given by the symbols A+, A, B, and C, it was necessary to give these symbols their numerical values of 97.5, 90, 80, and 70 respectively. These are the values which the City System assigns and they are used uniformly by the teachers throughout the Indianapolis system as of these values. This is, of course, not entirely accurate, but it would seem to be as fair for one subject as another, and also these were the only grades available. The A+ marking is the highest which a teacher may give, and plus or minus marks are not used with any other grading symbol.

Grades in other subjects - Science, Commercial courses, Language and Art - were available for a part of the student group whose grades comprise the material for this study, but since not all of the music students had records in these subjects, they could not be included. However, Tables IV and V and Figure 2 show the number of students taking each of these additional subjects and Chapter III contains some observations derived from this further study.

IMPORTANCE OF THE STUDY.

Such a study as the present one would seem to be justified by the modern emphasis in education on the encourage-

ment of those lines of human endeavor which minister to the profitable employment and true enjoyment of leisure time, and which tend to a broadening of the cultural and aesthetic values of normal human lives, among which music is perhaps the most universal. Also many school systems now either refer to music as an Academic subject, or include it in the same category in their courses of study. This change of attitude on the part of educators, giving to music a more responsible and just rating than the earlier conception with its stigma of such terms as "frill," "fad" and "fancy," would appear to be sufficient justification for the present study. But its real importance is to provide a factual basis for an answer to the person who can see no real value in music as a subject in the curriculum of our public schools, or who feels that the music student is inferior in other fields.

SUMMARY.

In an attempt to ascertain what relation exists between grades in music - an elective subject - and the grades made by the same students in other academic subjects, the records of four hundred senior music students at Emmerich Manual Training High School, over a period of five years, were compiled and compared. The justification and importance of the study are to be found in the modern emphasis upon education for leisure, inasmuch as music is perhaps the most universal avenue of expression.

CHAPTER II

GRADES IN MUSIC, ENGLISH, HISTORY, AND MATHEMATICS COMPARED

For the purpose of the present study four hundred grades were taken from the senior records of as many pupils in Music (Band, Orchestra, Chorus, and Harmony), English, History, and Mathematics. However, the grades in Commercial Studies, Science, Language, and Art subjects were also considered and reference will be made to these subjects in Chapter III.

If a larger sampling were available it might produce more valid results, but, inasmuch as these four hundred students are all who were enrolled in the music courses in their senior year over the period during which the present schedule has been in operation, it would seem unwise to go further back into the records. The span of five years covered by these records also included several changes in teacher personnel, which would tend to remove any objection on the score that one teacher's marks had been prejudicial.

Since only the records of the music students were wanted as a basis for comparison in their various studies, this, and the fact that all were seniors, constitute the

only element of selection with reference to the group under consideration.

Table I following shows the distribution of grades of the four hundred students being studied, in Music, English, History, and Mathematics. This table was derived from the raw scores as given on the records of Emmerich Manual Training High School, Indianapolis, and includes all the senior students of that school, who, over a period of five years, took Music in their senior year.

TABLE I. DISTRIBUTION OF GRADES IN MUSIC, ENGLISH, HISTORY, AND MATHEMATICS.

Grade	Music	English	History	Mathematics	Total	Mean of frequencies at each level
97.5	59	37	70	35	201	50.25
93.5	137	88	68	59	352	88.
90	127	85	61	62	335	83.25
85	66	78	74	86	303	75.75
80	10	44	66	59	179	44.75
75	2	50	31	61	144	36.
70	0	18	30	38	86	21.5
Total	400	400	400	400	1600	

This table is intended to be read as follows:-

Of the four hundred students considered in this study, 59 received the highest possible grade in Music (97.5); 37 received this highest grade in English, etc. The total num-

ber of highest grades (97.5) in the four subjects was 201 - over half the class - and the mean of the four subjects at this level was 50.25.

It will be noted that more students received the highest grade in History than in any other subject, though these were all music students by classification. The high point in the Music and English grades is at 93.8, while for History and Mathematics the high point is at 85. It will be seen that no music student is found at the low mark - 70 - and only two at 75. This is doubtless due to the fact that Music is elective in this school and the failures had been eliminated by natural processes in earlier classes - that is, those who were not receiving good grades did not elect to stay in the music classes. The high point for the four subjects is at 93.8, a very good average as the only basis for selection was the enrollment of these students in some form of Music during their senior year.

Table II following is given to show the distribution of the grades of the four hundred students considered in Music, English, History, and Mathematics, by percentages, and was derived from Table I by casting the figures into the corresponding percentages.

TABLE II. DISTRIBUTION OF GRADES IN MUSIC, ENGLISH, HISTORY, AND MATHEMATICS BY PERCENTAGES.

Grade	Music	English	History	Mathematics	Mean of percentages at each level
97.5	14.75	9.25	17.50	8.75	12.563
93.8	34.25	22.0	17.0	14.75	22.0
90.	31.75	21.25	15.25	15.50	20.933
85.	16.25	19.50	18.50	21.50	18.937
80.	2.50	11.0	16.50	14.75	11.187
75.	.50	12.50	7.75	15.25	9.0
70.	0.0	4.50	7.50	9.50	5.38
Total	100%	100%	100%	100%	100.00

This table is intended to be read as follows:-

Of the four hundred students considered in this study 14.75% received the highest possible grade in Music - 97.5, 9.25% received this highest grade in English, 17.5% received this highest grade in History, etc. The mean percentage for the four subjects is 12.563 at grade 97.5 - the highest grade given, etc. The graph of this distribution table (Table II) is shown on page 11.

It will be noted that only 2.5% of the class received grades as low as 80 in Music, while none were in the lowest classification. This was not true of the other subjects, as 9.75% were in the lowest classification in Mathematics, 7.5% in History and 4.5% in English. The highest grade -

97.5 - was reached by 17.5% in History as compared to the mean of 12.563. It will be seen that 80.75% of the class reached 90 or better in Music, while 52.5% of the class reached this mark in English, 49.75% in History and only 39% in Mathematics.

The highest mean percentage for the four subjects here treated is at 93.8. This seems to be a high standing, especially when it is remembered that the only classification of these four hundred students was that they were enrolled in Music during their senior year. It would appear to rate the music students high in other subjects as well as in Music.

Figure 1 following, which was derived from Table II, shows all the grades to be skewed to the right, especially Music, but this is to be expected as all the students were in their senior year and all the music courses are elective in this particular school But none of the grades falls below the passing mark (70) in any subject.

More grades were given in Music at 90 and 95 than in any of the other subjects while only History has more 97.5 grades.

Below the grade of 90 the Music grades drop off rapidly until there are only 2 or .5% at the 75 point and none at the low grade of 70, while English, History, and Mathematics grades continue to the lower limit (70) with 4.5%.

7.5% and 9.5% respectively at that point. No failures were recorded in any one of the subjects.

It will be seen that grades in Music, English, and Mathematics come together at about 86 - the only point in the graph where this occurs. The curve for Mathematics most nearly approaches normal with the high point at 85 and nearly equal representation at the two extremes - 70 and 97.5. English and Mathematics pursue an almost parallel course up to 85 beyond which the English curve continues gradually upward to the high point at 93.8 and then drops. This curve for English most nearly approaches the Music curve with its definite skew to the right. There may be some relationship between these two subjects though the presence of considerable numbers of English grades at the lower levels disturbs the parallel.

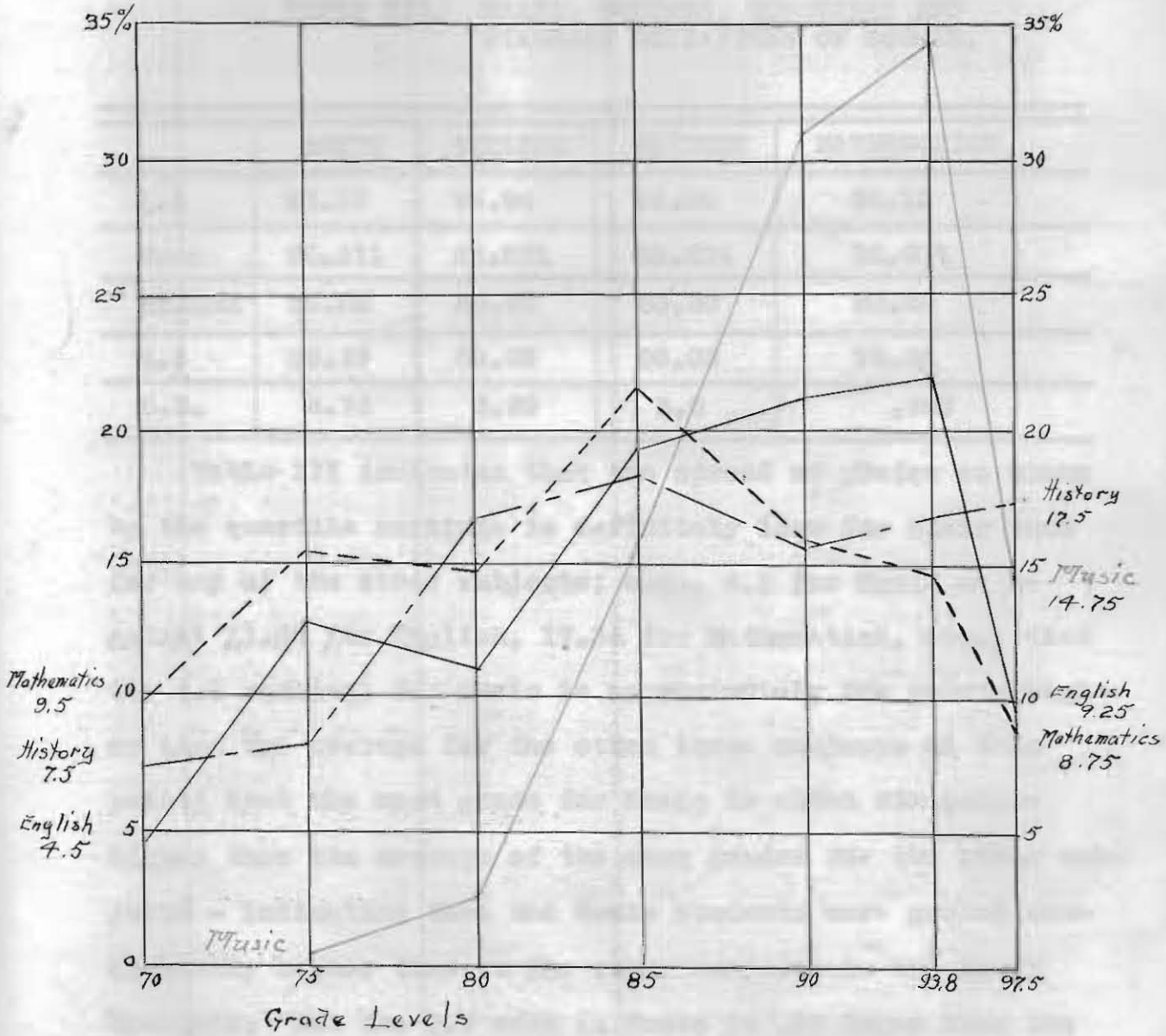

FIGURE 1. Showing distribution of grades in Music, English, History, and Mathematics in percentages.

The arithmetical means, medians, upper and lower quartiles and standard deviations, derived from Table I, are here given:-

TABLE III. MEANS, MEDIANS, QUARTILES AND STANDARD DEVIATIONS OF SCORES.

	MUSIC	ENGLISH	HISTORY	MATHEMATICS
Q.3	93.67	93.94	94.02	93.10
Mean	90.311	86.671	85.824	86.621
Median	86.25	83.80	83.80	83.80
Q.1	89.37	80.32	80.03	75.66
S.D.	4.78	2.99	3.0	.787

Table III indicates that the spread of grades as shown by the quartile rankings is definitely less for Music than for any of the other subjects; e.g., 4.3 for Music as against 13.62 for English, 17.34 for Mathematics, etc.; that the Q.1 ranking for Music is approximately ten points higher than the average for the other three subjects at this point; that the mean grade for Music is about six points higher than the average of the mean grades for the other subjects - indicating that the music students were graded consistently higher than in the other subjects in the lower brackets. But the Q.3 rank in Music is .02 lower than the average in the other three subjects, indicating that the better students in Music were just as good in the other subjects as in Music, while the Q.3 rank in History is .35

higher than in Music.

Table III shows that 17.5% of the pupils reached the highest possible marking in History while 14.75% reached this point in Music - surely the music students are not entirely lacking in capacity for academic work, though the correlation between Music and the other academic subjects is a negative one.

The coefficients of correlation were found to be as follows:-[1]

for Music and English	r = -.237
for Music and History	r = -.461
for Music and Mathematics	r = -.685

The coefficients show a slightly negative correlation between Music and the other Academic subjects, in so far as the four hundred grades investigated are concerned, and seem to indicate that no considerable relation exists between ability in Music and ability in any other Academic subjects, as recorded by teachers' marks.

SUMMARY.

The grades of four hundred High School senior students in Music, English, History, and Mathematics were noted and

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[1] The formula used was a slight modification of the Carl Pearson formula. The tables of raw scores from which these coefficients were derived comprised 3200 grades and were deemed too voluminous to incorporate in the present dissertation.

compared to ascertain what coefficient of correlation existed between these subjects. Tables of grades and percentages at the various marking points are presented together with the graph of the grades, showing a definite skewing to the right in all subjects - especially Music, which is elective in the school furnishing the grades, but the coefficient of correlation is low and minus, indicating no considerable relationship between Music ability and ability in the other Academic subjects.

CHAPTER III

MUSIC GRADES COMPARED WITH OTHER SUBJECTS

In addition to Music, English, History, and Mathematics, the group of students under consideration were studying other subjects, and the following tabulation records the total number enrolled in the various subjects and the percentage of each group receiving the highest marks, together with some comparisons with Music grades.

TABLE IV. ENROLLMENT IN COMMERCIAL, ART, SCIENCE, AND LANGUAGE COURSES.

	number	percent
Total number of students considered- - - - -	400	100
Taking Commercial courses- - - - - - - - - -	322	80.5
Taking Science courses- - - - - - - - - - - -	392	98.
Taking Language courses- - - - - - - - - - -	267	66.75
Taking Art courses- - - - - - - - - - - - - -	137	34.25
Taking Music and two other courses- - - - - -	110	27.5
Taking Music and three other courses- - - - -	224	56.
Taking Music and four other courses- - - - -	53	13.25

This table is intended to be read as follows:-

Of the four hundred students considered, 322 or 80.5% were enrolled in Commercial courses; 392 or 98% were enrolled in Science courses, etc.

TABLE V. HIGHEST GRADES (97.5) IN COMMERCIAL, ART, SCIENCE, AND LANGUAGE COURSES.

	number	percent
In Commercial courses- - - - - - - - - - -	60	18.6%
In Science courses- - - - - - - - - - - - -	82	20.9
In Language courses- - - - - - - - - - - -	55	20.6
In Art courses- - - - - - - - - - - - - - -	56	40.8
In Music and one other subject- - - - - - -	58	28.8
In Music and two other subjects- - - - - - -	41	37.2
In Music and three other subjects- - - - - -	34	10.7
In Music and four other subjects- - - - - -	2	3.77
In other than Music subjects- - - - - - - -	253	62.25
In all subjects taken- - - - - - - - - - -	17	4.25

This table is intended to be read as follows:-

60 students or 18.6% of the music students enrolled in Commercial classes received the highest possible grades in these classes; 82 or 20.9% of the music students enrolled in Science classes received the highest marks in those classes, etc.

It will be noticed that 62.25% of the music students received the highest possible marks in some other subject than Music, while 4.25% of the music students received only high-

est marks in all subjects taken in their senior year. Also 37.2% of the music students received highest marks in two other subjects in addition to Music, while 10.7% received highest marks in Music and three other subjects. It also appears that 201 students (50.25% of the class) received a grade of 90 or better in Music and that 28.8% of the class received the highest possible grade also in one of these other subjects - Commercial Studies, Science, Language, or Art.

13.25% of the class received grades of 97.5 in Music while carrying four other subjects - a full High School load - and of these 3.77% received the same highest grade in all four other subjects. This places a student on any honor roll.

It will be noticed that more students in Art subjects received the maximum grade than in the Language subjects, though the total number of students enrolled in Language is nearly double the Art enrollment. This may indicate a possible significant relationship between Art and Music aptitudes and would seem to furnish a field for further investigation.

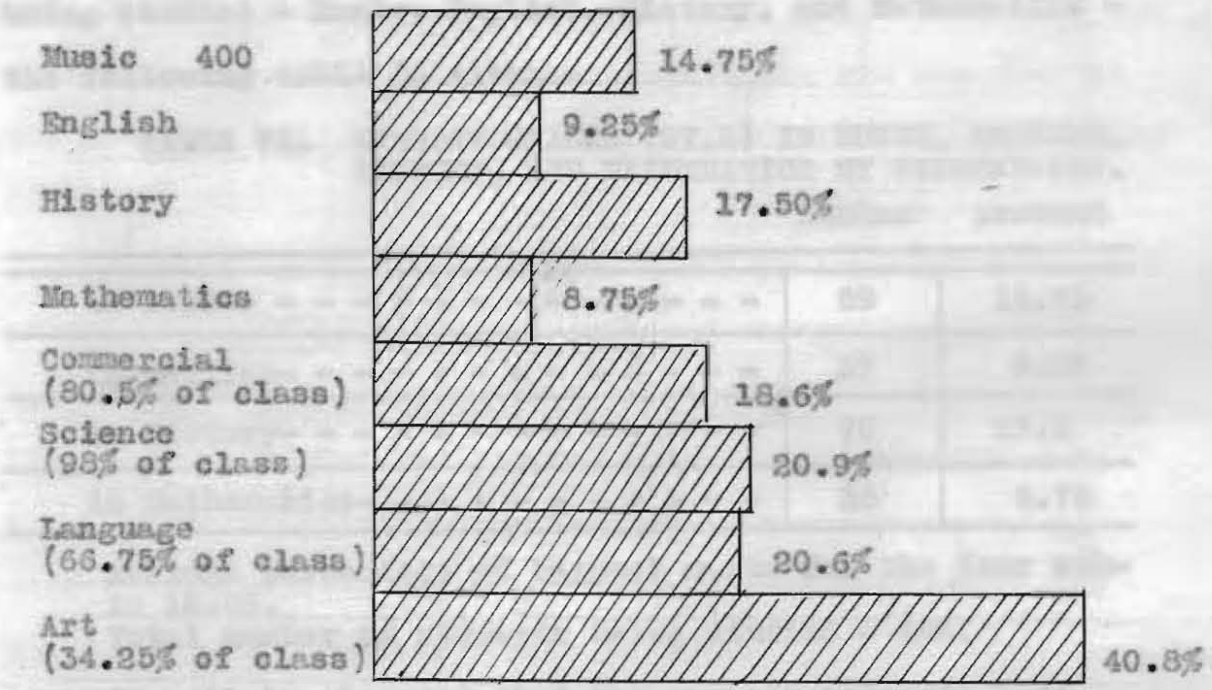

FIGURE 2. Maximum grades in all subjects considered.

All students were enrolled in Music, English, History, and Mathematics, while the number enrolled in Commercial, Science, Language, and Art is indicated above (left). Thus only 34.25% of the music students were enrolled in Art while 40.8% of these received the highest possible grades in that subject. The upper four subjects here shown are included in this study, the others being shown to indicate the caliber of the music students. It is to be regretted that not enough of the music students were enrolled in these other subjects to permit their inclusion in the present study.

In order that the percentages in Table V p. 16 may be compared with those of the same students in the four subjects

being studied - Music, English, History, and Mathematics - the following table is given:-

TABLE VI. HIGHEST GRADES (97.5) IN MUSIC, ENGLISH, HISTORY, AND MATHEMATICS BY PERCENTAGES.

	number	percent
in Music- - - - - - - - - - - - - - -	59	14.75
in English- - - - - - - - - - - - - -	37	9.25
in History- - - - - - - - - - - - - -	70	17.5
in Mathematics- - - - - - - - - - - -	35	8.75

Average percentage of highest marks for the four subis 12.56.
Total number of students being studied - 400.

It will be observed that the average percentage of highest marks (97.5) for the four subjects studied - Music, English, History, and Mathematics - is 12.56%, while the average of the percentage of highest marks in the other four subjects here introduced for comparison - Commercial, Science, Language, and Art courses - 25.2%. This variation is doubtless due to the fact that English, History, and Mathematics were required subjects while Commercial Studies, Science, Language, and Art were, like Music, entirely elective, andwere largely the lines of chief interest to the students enrolled in them. It is interesting to note the high percentage of highest grades in Art, and it is to be regretted that not enough pupils in Music took these subjects to enable a comparison to be made between Music and

Art, for example, as the scant data here given indicates the existence of a real relation between these two branches of the Arts, as well as a high level of accomplishment in other fields.

It will be observed (Tables I and V) that all but one of the students in Music who received the highest mark in that subject also ranked highest in one other subject. But it is in the 90 and 95 marks that the music students show the highest frequencies, exceeding the History grades by more than 2 to 1 at these levels and being well above the English and Mathematics grades as well.

Though there were more highest marks in History than in any other of these four subjects, the History grades from 85 to 95 fell below those of English, as also at the 75 point. At the 75 to 85 points, Mathematics has the high place above Music, English, and History, while English leads all but Music at the 90 and 95 points after an almost parallel course slightly below Mathematics up to the 85 point. Except for the sharp rise in Music grades from 85, English presents the nearest parallel with the Music grades, while at 86.5 the curves for Music, English, and Mathematics come together for the only point in the entire graph.

SUMMARY.

The four hundred students considered in the preceding

chapter were also engaged in other studies, though not all the music students were represented in any other field - hence the subjects of Commercial studies, Science, Language, and Art were not included in the principal study. But enough of these students were represented in these other studies for this further comparative study, andtheir grades are here considered on the basis of percentages. Tables and graphs present these comparisons and indicate the general high ability of the music students in fields generally considered as not closely allied with Music - except for the courses in Art.

CHAPTER IV

CONCLUSIONS

Since the coefficient of correlation between Music and the other Academic subjects - English, History, and Mathematics - is a small minus one, it appears that no considerable relationship exists between these subjects, yet so many music students ranked high in their other courses that the presence of real ability is firmly established.

We therefore conclude that ability in Music is a special aptitude - perhaps neither greater nor less than the aptitudes in English, History, or Mathematics, but at least differing from these in such a way as not to be capable of measurement in the same manner or by the same criteria, and that the music student may be expected to do well in some subjects and poorly in others - that ability in Music cannot be used as a basis for prediction for or against ability in other subjects.

It is also concluded that the music student may or may not do good work in other fields, but that the idea that a student who is good in Music is good for nothing else is false and without foundation in fact, though his accomplish-

ments in Music may not safely be used in predicting success in any other line.

When more of these music students attained the highest possible rating in History than in Music by 2.75% while in English and Mathematics they were only about one-third below the Music grades, and when over half the music class received 97.5 in some subject in their senior year, there is certainly substantial evidence to sustain the music teacher in his high regard for the mental ability of his charges.

RECOMMENDATIONS.

It is recommended that the scope of music education at the High School level be broadened to include more Music Theory, Harmony, Composition, and Orchestration to the end that the more talented of our music pupils may begin to develop their peculiar talents, indicated by this study, at an earlier age.

It is also recommended that school administrators acquaint themselves more intimately with their musically talented pupils and their records, that the courses of these gifted pupils may be arranged to foster their special interests and abilities.

It is hoped and further recommended that some one will give himself to the task of working out the correlation between Music and some other of the Art subjects, that the affinity between these subjects, strongly indicated in this present study, may be definitely recorded.