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An experimental comparison of two methods of selecting beginning instrumental students

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AN EXPERIMENTAL COMPARISON OF
TWO METHODS OF SELECTING BEGINNING
INSTRUMENTAL STUDENTS

Contributions
of the Graduate School
Indiana State Teachers College
Number 541

In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Education

by
Harold L. Rogers
August 1946

The thesis of Harold Rogers,
Contribution of the Graduate School, Indiana State
Teachers College, Number 541, under the title AN EXPERIMENTAL COMPARISON OF TWO METHODS OF
SELECTING BEGINNING INSTRUMENTAL STUDENTS

is hereby approved as counting toward the completion
of the Master's degree in the amount of 8 hours'
credit.

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organization and tabulation of data, and final presentation of the thesis.

H. L. R.

2. SUMMARY OF THE EXPERIMENT

Group findings

Class (combined group) findings

General observations

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS USED

With the current demand for re-evaluation of our educational policies and practices, there exists a definite need for reconversion, guided by scientific facts, in the field of public-school music. This need was substantiated by an experience of the writer during the year 1945, while a member of the armed forces. As an instructor in the army band training unit at Camp Lee, Virginia, one of his duties was to examine incoming enlisted men, prior to their acceptance by the unit. The enlisted men had been classified as musicians and had listed from one to five years' experience in public-school instrumental organizations; yet, less than ten per cent of the weekly auditions qualified for the band school. Does this not signify a need for truer evaluation of the instrumental program in our public schools? If so, it is but the first step. Evaluation must be followed by the establishment of policies, techniques, methods, and procedures that will enable the music teacher to determine which students should play an instrument and on which particular instrument each student will achieve the greatest success. Teachers must be provided with these and other scientific facts that will enable them to give better instru-

mental guidance.

I. THE PROBLEM

Statement of the problem. It is the aim of this experiment to discover, for the purpose of guidance, whether the application of scientific factors in selecting beginning instrumental students will insure a greater degree of success in playing the instrument.

Importance of the problem. The many requests for performance of the music department throughout the school year, places it under constant subjective evaluation by the public. If instrumental music in public schools is to survive and serve a purpose, it must be built on a sound philosophy, operate with scientifically proved methods, and contribute to the needs of the social order in which it functions.

Many children have studied an instrument; but they have failed to reach the desired goal, leaving an expensive instrument as a reminder of wasted money, effort, disappointments, and teachers who mis-directed them. Will this multitude of misguided people feel kindly toward the future instrumental program? Will they not demand better instrumental guidance for their children than they themselves received? The instrumental teacher must be aware of scien-

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tifically tested knowledge of pupils' intelligence quotients, musical aptitude, capacity, physical limitations, and temperament. He must know if students selected on the basis of such factors do achieve greater success. The teacher's success in the school of tomorrow will depend on the use of these and other scientifically proved facts.

Robert L. Gaines says:

I should say at least six factors should be considered in attempting to give guidance to the instrumentalist: (1) Motor capacities, determined by pre-instrumental instruction in the fifth grade; (2) The Seashore test, or similar devices, administered at the beginning of the sixth grade; (3) Ability to learn; (4) Perseverance; (5) Imagination; (6) Physical factors.¹

II. DEFINITIONS OF TERMS AND METHODS USED

Method of procedure. The experimental method of research was selected and the following procedure established:

- (1) Select two groups of instrumental students; one group selected with interest as the only factor; the other group selected with the aid of recommended scientific factors.
- (2) Give the two groups equalized instruction for a given period of time.
- (3) Administer an achievement test.
- (4) Interpret the results as a measure of success.

Methods of selection. It is understood that there

¹Robert L. Gaines, "Guidance and Instrumental Music," Music Educators Journal, 29:21-23, January, 1943.

are numerous methods of selecting beginning instrumental students. These definitions are of the two methods used for this experiment. Method I. The only required factor of a student selected under this method is interest or a desire to play a particular instrument. Such interest is usually the result of a demonstration of the particular instrument or some past stimuli. The writer feels that this method of selection represents that too often used in many public schools. The student is encouraged to play the particular instrument which will complete the band's instrumentation. It also illustrates the situation of a parent's insistence that his child be taught a particular instrument because he likes it, it is cheap, or a relative donated it. Often, interest in a particular instrument is aroused because a playmate or some idol of the child plays one like it.

Method II. Factors considered in this method of selection are: Intelligence quotient, music aptitude, embouchure, hands and stature, ease of blowing the instrument, and the room-teacher's comments. These were selected as a representative group of factors that every instrumental instructor should be able to consider.

Success. Since success is controversial and its evaluation rests largely on personal opinion, it was decided to use the results of the devised achievement test as a

measurement of success.

Embouchure. Embouchure is universally understood among music educators as the shaping of the lips, jaws, tongue, etc., in producing a musical tone, especially on a wind instrument. Each instrument has individual problems of embouchure development, with which the instrumental instructor is assumed to be acquainted.

III. ORGANIZATION OF REMAINDER OF THE THESIS

Chapter II reviews the related literature and previous studies; Chapter III is a description of the experiment; Chapter IV shows the results of the experiment; and Chapter V is a summary with conclusions. The bibliography and appendix conclude the thesis.

1. The first chapter is a review of the literature on the subject of embouchure. It includes a discussion of the various methods of teaching embouchure and the results of the studies conducted in this field.

2. The second chapter is a description of the experiment. It includes a discussion of the subjects, the apparatus, the procedure, and the results of the experiment.

3. The third chapter is a discussion of the results of the experiment. It includes a discussion of the various factors which influence the development of embouchure and the results of the experiment.

4. The fourth chapter is a summary with conclusions. It includes a discussion of the various factors which influence the development of embouchure and the results of the experiment.

CHAPTER II

REVIEW OF RELATED LITERATURE

Writers of books and periodicals have stimulated much discussion of ways and methods of selecting instrumental beginners; however, comparatively little experimentation has been done.

Lamp and Keys¹ conducted an experiment to determine if aptitude for specific musical instruments can be predicted. They developed a system, whereby pupils were given effective trial periods on three major instruments; namely, brass, woodwind, and stringed. By administering these trials to one hundred and fifty pupils, under controlled conditions, preceded by various mental and physical measurements, a number of conclusions were reached. They are:

1. Neither pitch or tonal memory as gauged by Seashore tests affords an index of aptitude for brass, woodwind, or stringed instruments, which is adequate for individual guidance. The prognosis obtainable from Terman group I.Q.'s is poor yet.

2. Teeth evenness and length or slenderness of fingers show no significant appreciable relationship with achievement on any instrument studied, though considered important by many instructors and writers of music manuals.

3. There appears to be some agreement between thickness of lips and diameter of mouthpiece of the

¹Dr. Charles J. Lamp and Noel Keys, "Can Aptitude for Specific Musical Instruments be Predicted", Journal of Educational Psychology, 26:587-96, November, 1935.

brass horn on which an individual is most likely to succeed, but the correlation is extremely low ($r = .28$).

4. A combination of scores on pitch discrimination, tonal memory, and the Terman group intelligence test is found to predict performance on brass horns sufficiently well ($r = .58$) to be of some assistance in guidance.

5. No combination of the mental and physical measurements here obtained serves to forecast success on clarinet or violin with a correlation higher than .42. This is too low for practical use in individual prediction.

6. Correlations between success on instruments of the different types studied range from .31 to only .57. Aptitude, even for instrumental music, seems, therefore, sufficiently specialized that measures of musical talent should be validated as far as possible in terms of specific forms of expression, rather than "hypothetical" general musicality.²

William S. Larson³, of the Eastman School of Music, Rochester, New York, made a study, in 1930, in the field of pupil guidance. He attempted to find a way to predict success in the field of instrumental music. Mr. Larson found that pupils ranking high on the Seashore Musical Talent Tests were most likely to succeed in orchestral work.

Other experiments may have been completed in this field and not reported. The investigation of musical talent and the prediction of success have long been subjects of psychological inquiry.⁴ In the majority of investigations

²Loc. cit.

³William S. Larson, "Measurement of Musical Talent for the Prediction of Success in Instrumental Music", University of Iowa Studies in Psychology, 13:33-37, 1930.

⁴J. L. Mursell, "The Psychology of Music", Psychological Bulletin, 29:218-241, 1932.

no clear distinction has been made between musical theory and performance; while practically no investigators have taken the pains to study separately the determinants of success with instruments of widely different types. It is surprising that findings in most cases have been conflicting, and results of value for guidance are meager.

Although they have not carried on scientifically controlled experiments, many instrumental teachers have followed definite plans in selecting beginners, which have proved successful. A few have written of practices and convictions.

In the schools of Rochester, New York, all students taking the Seashore Musical Talent Test are divided into four groups, concerning which the following recommendations are made: (1) Encourage strongly (most talented group); (2) Encourage (next to most talented group); (3) Encourage conditionally (next to the least talented group); and (4) Not recommended (least talented group). The seven hundred school-owned instruments are placed in the hands of the most talented, and the more talented are directed into special classes in music--both vocal and instrumental.⁵

⁵William S. Larson, "Some Trends in Music Education", Education, 23:513-20, May, 1936.

⁶William S. Larson, "Instrumental Adaptation and Applicable Music", The Music, 59:501-24, September, 1941.

Revelli⁶, in writing of the beginning instrumentalist, suggests that students and parents must be made to understand that the happiest choice of an instrument lies in a consideration of both physical and mental aptitudes. Tests should be given to serve as a basis in determining the musical aptitude of the student. Information concerning the student's academic background and personal habits or personality traits, should be secured from the school. This should be followed by an adaptation class, in which the student is given a demonstration of the various instrument groups; namely, brass, reed, string, and percussion. Then follows a testing period, wherein every student is given an opportunity to try an instrument in each of the groups. Mr. Revelli summarizes his article by saying:

The instructor who carefully follows the adaptability procedure will find that the problem of correct proportions as well as correct apportionments will solve itself. The psychological problems which one usually meets with beginning students, who have certain notions about what instrument they wish to play, usually resolve themselves when the informed instructor carefully lets the student and his parents know that there is a great deal more to the selection of an instrument than just choosing one out of the air.

With a sane, careful approach to the matter of adaptability, the weaknesses of instrument assignments in our present program will be eliminated, and the whole course of music progress strengthened.⁷

⁶William D. Revelli, "Instrumental Adaptation and Aptitude Tests," The Etude, 59:601-2+, September, 1941.

⁷Loc. cit. 19-20, September, 1945.

Robert L. Gaines⁸, in writing of factors to be considered in selecting the instrumental student, recommends the use of at least six: (1) Motor capacities, determined by pre-instrumental instruction; (2) Seashore, or similar tests; (3) ability to learn; (4) perseverance; (5) imagination; and (6) physical factors.

Meyers⁹ recommends that the instructor be aware of the characteristics of the various instruments and take into consideration the particular requirements each makes upon the player. Investigate the student's scholastic record, the musical background of his family, and various phases of his personality. Then, further investigations should be made with music talent and aptitude tests; and finally, include the findings of preparatory instruments and the results of a preclinical period on various instruments.

Weber¹⁰ suggests the use of pre-instrumental classes. Numerous talent tests, devised by various instrument companies, can help the director select beginners; however, most of such tests do not reveal many important factors. They will not show personality traits, physical traits, and

⁸Robert L. Gaines, "Guidance and Instrumental Music," Music Educators Journal, 29:21-22+, January, 1943.

⁹A. C. Meyers, "Come Blow Your Horn--But Which One?", Music Educators Journal, 28:29+, January, 1942.

¹⁰Fred Weber, "Why Create Dead-Wood?", Educational Music Magazine, 31:19-20, September, 1945.

home conditions. Mr. Weber feels that, as a general rule, students who excel in academic subjects will also be best in music. He believes the classroom teacher is the best judge of the child's ability and general characteristics and is in a position to give the instrumental teacher information concerning intelligence, stability, industriousness, and home environment. He summarizes his article as follows:

In the past, advice to directors put much emphasis on the kind or make of instruments to use, the proper presentation of subject matter, and the best instruction method. If more emphasis were put on the proper selection of beginning students, many problems of developing good instrumental groups would be solved in an easy manner.¹¹

Griffith¹², in an article on guidance in music, stresses the importance of giving intelligent instrumental guidance and makes the following recommendations: evaluate the situation carefully by checking the child's physical, mental, and emotional qualities; study his cumulation record and home environment; when instruments are owned by the school, let the student try various ones for three or four weeks, as an exploratory experience.

Watkins¹³ advises the use of a trial period in

¹¹Loc. cit.

¹²Ruth Griffith, "The Music Supervisor and the Guidance Program", Music Educators Journal, 12:20-21, September, 1945.

¹³William J. Watkins, "Overture to Extensive Instrumental Work," Nations Schools, 24:24-7, August, 1939.

selecting beginners. He says:

The pre-instrumental class, by use of a simple yet practical instrument, presents the actual problems involved in the teaching of regular instruments. It soon exposes those who lack ability, coordination, or desirable traits. In addition to this, there is a positive advantage in that those who finish the pre-instrumental class are grounded in the fundamentals of instrument playing, notation, and procedure.¹⁴

Prescott and Chidester¹⁵, in writing on instrument adaptation, stress the importance of perfect adaptation; but they recommend that it not be forced. Many children have overcome physical handicaps and have become accomplished performers on the favored instrument. Prescott and Chidester favor tests given by what may be termed a laboratory method, wherein, the student is given individual experimentation with each instrument. They stress further the importance of temperament of the child; some students possess all physical requirements, but fail to succeed because the particular instrument does not fit the temperament of the pupil.

Hindsley¹⁶, in his book, School Band and Orchestra Administration, strongly recommends the use of aptitude

¹⁴Loc. cit.

¹⁵Gerald R. Prescott and Lawrence W. Chidester, Getting Results with School Bands (Chicago: Carl Fischer, Inc., 1938), pp. 33-36.

¹⁶Mark H. Hindsley, School Band and Orchestra Administration (New York: Boosey and Hawkes, Inc., 1940), p. 12-13.

tests, student I.Q.'s, academic grades for the preceding year, and personal and physical characteristics in selecting the beginner. This should be followed by a pre-class clinic, wherein the student actually has a trial on several instruments. The final proof of ability should lie in the actual trial. A full chapter is devoted to the pre-class clinic and a recommended procedure.

Authorities do not always agree as to the significance of physical characteristics. For example, one writer, whose book is widely circulated among instrumental teachers, emphasizes that "irregular teeth militate against success with a cup-mouthpiece instrument (brass horn), but are no handicap on reed (woodwind) instruments."¹⁷ Whereas, another writer states, "Reed instrument players must have even lower-teeth."¹⁸ At the best, such theories are unsupported by experimental evidence. At the worst, they serve to perpetuate errors and enhance the waste characterizing much music instruction.

This review of related literature implies that there is much agreement among the writers as to the factors which should be used in selecting beginners. The importance of the

¹⁷Z. P. Wright, What Instrument? (Cleveland: H. W. White Company, 1927), p. 5.

¹⁸J. E. Maddy, School Bands--How They May Be Developed (New York: National Bureau for the Advancement of Music), p. 10.

trial period is stressed by all. However, it shows that little experimentation has been done in this field.

CHAPTER III

DESCRIPTION OF THE EXPERIMENT

The experiment was conducted with only one type of instrument on the assumption that such a procedure would provide a more specialized investigation. The current scarcity of instruments had to be considered. After an investigation of instruments available at the Laboratory School, where the experiment was to be conducted, the clarinet was chosen.

Setting of the experiment. Ten clarinets were selected and overhauled so that they were in excellent playing condition. The clarinets were numbered from one to ten. Twenty new mouthpieces, with medium open lays, were secured. Two mouthpieces were fitted to each clarinet and numbered A1, B1, A2, B2, A3, B3, etc. Twenty small hand mirrors were secured so that each child could observe and study his embouchure. The Rubank Elementary Method for Clarinet, by N. W. Hovey, was selected for instructional material.

Two groups of ten pupils were selected, Group A by Method I and Group B by Method II. Each pupil of the group was assigned a number from one to ten. Since only ten clarinets were available, one instrument was assigned to two pupils. Thus, pupil number one, Group A, and pupil number

one, Group B, were assigned to clarinet number one; pupils' numbered two in each group were assigned to the instrument numbered two, etc. Each pupil was asked to remember the number of his mouthpiece and clarinet. Hereby, each used his own mouthpiece and the same instrument during the entire experiment. As a practical experiment this arrangement was desirable because it represents the exact situation found in many schools, where there are seldom sufficient instruments for each pupil to have his own.

The experiment was conducted in the band room of the Laboratory School from 12:45 to 1:30 o'clock of each school day, for four weeks. The period, from 12:45 to 1:30 o'clock, was regularly used for instrumental classes in the school.

The Pan-American Music Aptitude Test was selected to measure the pupils' natural music ability. The intelligence quotients, as measured by the Otis Self-Administering Tests, Intermediate Form, were secured from the school clinic.

Equating the groups. Since the purpose of the experiment was to evaluate two different methods of selecting beginners, the groups could not be equated in factors pertinent to the methods of selection; however, they were equated as follows: (1) All possessed interest for the clarinet; (2) None had received previous instrumental instruction of any form; (3) None had an instrument in his

home; and (4) Each group had two forty-five minute periods of familiarization with the clarinet before the experiment began. An attempt was made to equalize the sex, but it was necessary to use six boys and four girls in Group A, and seven boys and three girls in Group B. It should be noted that from hereon, Group A will be used to represent the group selected under Method I, and Group B to represent those selected by Method II.

Conducting the experiment. All pupils from grades 5A, 5B, 6A, and 6B were assembled to hear a brief talk on instrumental music, explaining its value and objectives. It was then announced that instrumental classes in brasses, reeds, strings, and percussion were to be organized. All were asked to discuss this with their parents and decide whether or not they were interested in studying an instrument. The following day the group was assembled and each pupil was given a prepared-form¹ to be filled out and returned. Among other desired information, the form afforded the listing of first, second, and third choice instrument. The pupils who listed clarinet as first choice were taken to an adjoining room, where all details of the experiment were explained. Each was given a letter², prepared for the

¹See Appendix. At the end of the period, the writer

²See Appendix. As who, he felt, possessed the better

parents, explaining the experiment and requesting signature of approval. Thirty-five pupils returned the approval form. These pupils were then assembled, and the writer administered the Pan-American Music Aptitude Test. Their names were listed and the music aptitude scores recorded. The list was then submitted to the school clinic for the recording of intelligence quotients and to the home room for classroom teachers' comments.

The thirty-five names were then written on small individual cards, placed in a container, and thoroughly mixed. A pupil was asked to draw ten names from the container; the names were listed in the order drawn--forming Group A.

The standard decided upon for refining the remaining twenty-five pupils was: (1) An intelligence quotient of one hundred or above; (2) A music aptitude score of eighty or above; and (3) Favorable comments by teachers. Evaluation, by the above criteria, reduced the group to fifteen. A pre-clinic trial of the clarinet was then conducted for them. Each was given a mouthpiece with reed attached, a hand mirror to observe embouchure, and instructions in tone production. The following day, the same group met for a second forty-five minute period, working with the clarinet fully assembled. At the end of the period, the writer selected the ten pupils who, he felt, possessed the better

embouchures, had hands and stature suitable for the clarinet, and showed ease of blowing (tone production). The ten selected were listed, forming Group B. Table I, page 20, shows the ranked intelligence quotients, music aptitudes, and room teacher comments of the thirty-five pupils interested in the clarinet; those drawn from the container to form Group A; those remaining after evaluation of intelligence quotients, music aptitudes, and room teacher comments; and those finally selected after the pre-clinic trial.

As a final step in equating the groups, Group A was assembled for two forty-five minute periods for instrument familiarization. Then the two groups were combined, forming one class of twenty. Permanent seats³ were assigned and instruction began. Table II, page 21, shows a composite of selection factors possessed by each group.

In comparing the two groups by statistical methods, vast differences were found. In Group A the range in intelligence quotients was 85 to 128; the mean intelligence quotient was 104.4. In Group B the range in intelligence quotients was 100 to 129, with the mean intelligence quotient 113.7. The mean difference in intelligence quotients was 9.3. Table III and Graph I, pages 22 and 23, show the ranked intelligence quotient of each member of the groups and a

³See Appendix.

TABLE I
INTELLIGENCE QUOTIENTS, MUSIC APTITUDES, AND TEACHER
COMMENTS OF THE THIRTY-FIVE PUPILS EXPRESSING
A DESIRE TO PLAY THE CLARINET

Pupil Number				Intelligence Quotient	Music Aptitude	X - Pupils drawn from container; forming Group A Y - Pupils remaining after first refinement Z - Pupils selected for Group B
	X	Y	Z			
						ROOM TEACHER COMMENTS
1		X	X	129	94	Excellent student, very reliable
2	X			128	58	Dependable, capable
3		X	X	128	88	Quiet, dependable, works well
4	X			126	96	Intelligent, but not adjusted
5		X	X	122	84	Timid but tough, a real worker
6		X		120	94	Applies self, but tends to be a dreamer
7		X		118	82	Quiet, works well
8		X	X	117	88	Good student, reliable
9		X	X	117	82	Typically Dutch, very dependable
10	X			113	84	Good material, but immature
11		X	X	110	92	Usually tries, good student
12		X	X	110	90	Has ability, keep him busy
13		X		108	90	Dependable, good background
14		X		107	82	Tries hard, good attitude
15	X			106	82	Defective vision, needs to concentrate
16		X	X	104	94	Works well, fine student
17	X			101	78	Immature, developing fast
18		X	X	100	84	Has ability, partially genuine
19	X			100	66	Helpful, considerate
20		X	X	100	90	Excellent citizen, tries hard
21		X		100	84	Good student, must be challenged
22				98	88	Dependable, good attitude
23				98	78	Very unreliable
24	X			98	80	Dependable, good attitude
25				94	84	Works well under proper conditions
26				94	88	Does not cooperate, rather spoiled
27	X			94	88	Not dependable, maladjusted
28	X			93	80	Unhappy child, needs help
29				90	84	Tries hard, does poor work
30				90	86	Not much ability
31	X			85	87	Slow in all work, seldom volunteers
32				85	80	Tempermental, maladjusted
33				85	82	Slow in all work
34				81	88	Slow, but tries hard
35				73	72	Could do more work, rather lazy

TABLE II

A COMPOSITE OF SELECTION FACTORS

KNOWN IN EACH GROUP

GROUP "A"

Assigned Pupil Number	I. Q.	Music Aptitude	Teacher Comment	Embouchure	Hands Stature	Ease of Blowing
1	128	58	+	?	?	?
2	106	82	-	?	?	?
3	94	88	-	?	?	?
4	98	88	+	?	?	?
5	101	78	-	?	?	?
6	126	96	-	?	?	?
7	100	66	+	?	?	?
8	93	80	-	?	?	?
9	113	84	-	?	?	?
10	85	80	-	?	?	?
Z	FACTORS PUPILS POSSESSED WHEN DRAWN					

GROUP "B"

Assigned Pupil Number	I. Q.	Music Aptitude	Teacher Comment	Embouchure	Hands Stature	Ease of Blowing
1	129	94	+	+	+	+
2	122	84	+	+	+	+
3	110	92	+	+	+	+
4	104	94	+	+	+	+
5	128	88	+	+	+	+
6	100	84	+	+	+	+
7	110	90	+	+	+	+
8	117	88	+	+	+	+
9	117	82	+	+	+	+
10	100	90	+	+	+	+
Z	DETERMINING FACTORS IN SELECTION					

+ = Good
 - = Poor
 ? = Un-measured
 Z = Both groups possessed interest

TABLE III

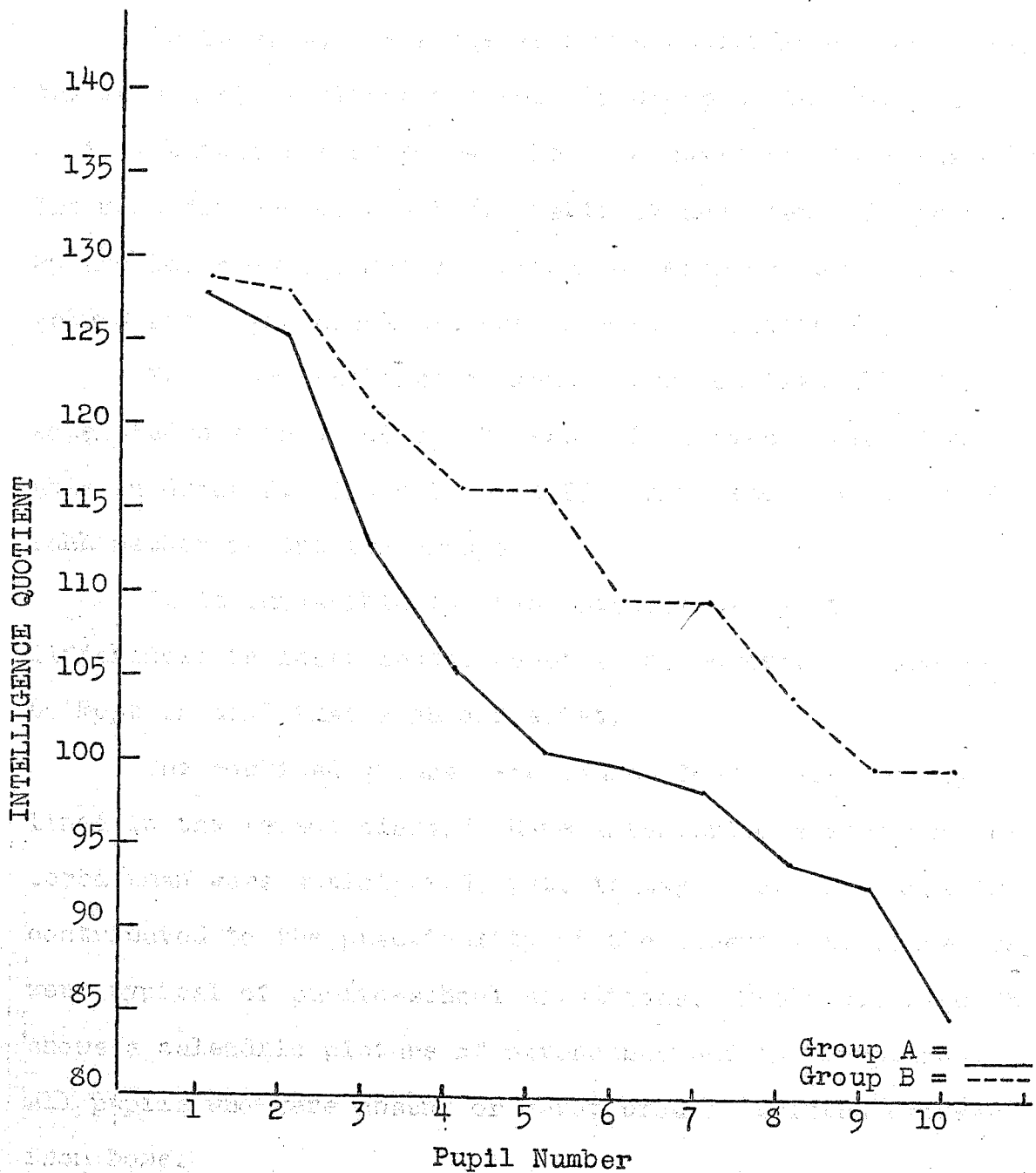
RANKED INTELLIGENCE QUOTIENT SCORES
 OTIS SELF-ADMINISTERING TEST OF MENTAL ABILITY
 INTERMEDIATE FORM

GROUP A		GROUP B	
Pupil Number	Score	Pupil Number	Score
1	128	1	129
2	126	2	128
3	113	3	122
4	106	4	117
5	101	5	117
6	100	6	110
7	98	7	110
8	94	8	104
9	93	9	100
10	85	10	100
Mean	104		113.7
Diff. of Mean			9.7

Pupil Number

GRADE 1

RANKED INTELLIGENCE QUOTIENT
 OTIS SELF-ADMINISTERING TEST OF MENTAL ABILITY
 INTERMEDIATE FORM



GRAPH I

RANKED INTELLIGENCE QUOTIENTS
 OTIS SELF-ADMINISTERING TEST OF MENTAL ABILITY
 INTERMEDIATE FORM

graphical picture of mental abilities.

In Group A, the range in music aptitude was 58 to 96; the mean music aptitude was 80. In Group B, the range in music aptitude was 82 to 94; the mean music aptitude was 88.8. The mean difference was 8.8. Table IV and Graph II, pages 25 and 26, show the music aptitude of each member of the groups and a graphical picture of musical aptitudes.

The room teachers' comments were not favorable for some students in Group A; whereas, all comments were favorable in Group B. Table V, page 27, shows the comments for each member of the two groups.

It is impossible to show, statistically, the differences in instrumental adaptation; however, it should be kept in mind that such did exist.

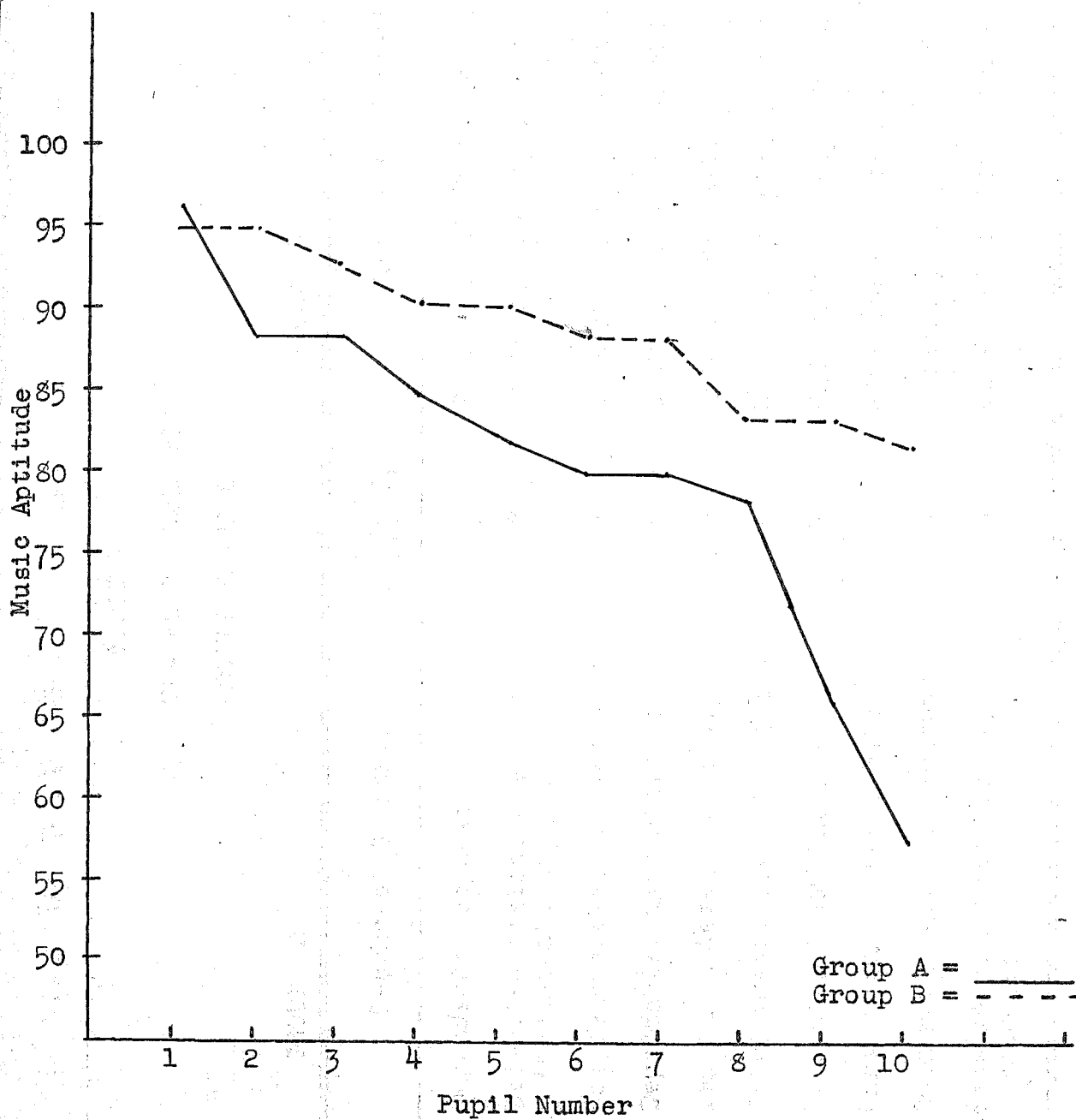
The combined groups were taught four weeks, as outlined in the lesson plans.⁴ More interruptions were encountered than were anticipated; yet, it may be assumed that they contributed to the practicality of the experiment, since they were typical of public-school situations. Table VI, page 28, shows a calendric picture of attendance and interruptions. All pupils who were absent or tardy brought written excuses from home.

Holding the variables constant. A definite attempt

⁴See Appendix.

TABLE IV
 RANKED MUSIC APTITUDE SCORES
 PAN-AMERICAN MUSIC APTITUDE TEST

GROUP A		GROUP B	
Pupil Number	Score	Pupil Number	Score
1	96	1	94
2	88	2	94
3	88	3	92
4	84	4	90
5	82	5	90
6	80	6	88
7	80	7	88
8	78	8	84
9	66	9	84
10	58	10	82
Mean	80		88.6
Diff. of Mean			8.6



GRAPH II
RANKED MUSIC APTITUDE SCORES
PAN-AMERICAN MUSIC APTITUDE TEST

TABLE V

CALENDARIC RECORDS OF SCHOOL INTERVENTIONS
AND ROOM TEACHERS' COMMENTS

GROUPS A AND B

GROUP A		GROUP B	
Pupil Number	Teachers' Comment	Pupil Number	Teachers' Comment
1	Dependable, capable	1	Excellent student, very reliable
2	Defective vision, needs to concentrate	2	Timid but tough, a real worker
3	Not dependable, mal-adjusted	3	Usually tries, good student
4	Dependable, good attitude	4	Works well, fine student
5	Immature, developing fast	5	Quiet, works well
6	Intelligent, but not adjusted	6	Has ability, partially genuine
7	Helpful and considerate	7	Has ability, keep him busy
8	Unhappy child, needs help	8	Good student, reliable
9	Good material, but immature	9	Typically Dutch, very dependable
10	Slow in all work, seldom volunteers	10	Excellent citizen, tries hard

TABLE VI

A CALENDRIC PICTURE OF SCHOOL INTERRUPTIONS
AND DAILY ATTENDANCE OF EACH PUPIL

GROUP A -- Pupil Number	March 25-29	April 1-5	April 8-12	April 15-19	April 22-26
1					
2					A
3					A
4					A
5	L	L	L		L L
6			A A		A A
7			A		
8					
9			A		
10					
GROUP B -- Pupil Number			W X	No School Easter Vac	Y Z
1	A A				
2	A				A
3		A			
4			A A		
5					
6	L L A				L L
7	L L L L		L L		
8					
9					
10		A A A A A			

A = Absent from School

L = Late to Class

W = Governor in Town, no School

X = School out for ballgame, Class met at 11:30

Y = Changed school schedule, Class met at 11:30

Z = Circus in town, no school, Class met at 11:30

was made to hold the variables constant. The same teacher taught throughout the experiment. Both groups were assembled as one class, and received the same instruction for the same length of time. A new mouthpiece of medium open lay was provided for each pupil. All instruments were checked after each lesson, and new reeds were applied if needed. No pupil was permitted to blow or handle the instrument prior to or following the instruction period. Each pupil, in promising to cooperate with the investigation, agreed to do no outside study or preparation of any kind.

In preparing for the final test, each was allowed the same length of time to "warm up" his instrument, and each played the same exercises in the same order, when appearing before the three judges.

Devising an achievement test. Before the groups could be tested for results, it was necessary to have an achievement test. An extensive search produced nothing, but it was enlightening.

Strangely, more work has been done in devising sight singing tests than in devising a measure of instrumental performance; yet, the possibilities of objectivity are greater in instrumental music. Burns⁵ devised a rating

⁵S. T. Burns, "The Value of Prognostic Tests for Instrumental Pupils," School Music, 31:6-9, March, 1931.

system for determining the sight reading ability of instrumental pupils. He found that performance tests were of the most value. Lamp and Keys⁶, in their study "Can Aptitude for Specific Musical Instruments Be Predicted?", found it necessary to construct a performance test and reported reliabilities of .95 to .97 and validities of .78 to .87. However, no details regarding the construction of the test were given. Watkins⁷, constructed an objective test to measure sight and practical performance on the cornet, and claims high validity and reliability. Stelzer⁸ developed an instrumental-performance test for the organ. Item difficulties were computed and an objective scoring system was devised. Very high reliabilities were found.

At the present time, individual-performance tests are the only types of achievement measures which produce sufficiently high reliabilities to permit use. The need for objective measures of musical performance is widely recognized, but few tests have been developed that can claim

⁶Charles J. Lamp and Noel Keys, "Can Aptitude for Specific Musical Instruments Be Predicted?" Journal of Educational Psychology, 26:587-96, November, 1935.

⁷J. G. Watkins, "Objective Measurement of Instrumental Performance," (unpublished Doctor's dissertation, Columbia University, New York, 1942), p. 84.

⁸Theodore G. Stelzer, "Construction, Interpretation, and Use of a Sight Reading Scale in Organ Music, With an Analysis of Organ Playing into Fundamental Abilities," Journal of Experimental Education, 7:35-43, 1938.

real scientific objectivity.

McKinley⁹ believes that the criterion for evaluating all music is how it sounds. If this is true, he says the standard by which we measure is a matter of personal opinion. Such a standard will vary with locality, as well as with the training and experience of the person judging. (Many will differ, of course, with McKinley's first statement.)

In view of these facts, an attempt was made to devise an achievement test that would best measure the experimental group. The ten important points in playing an instrument, as listed by Vandercook¹⁰, were accepted as the basic guide, and an effort was made to keep the test as nearly objective as possible.

Five factors, tone, range, technique, time, and playing position, were adopted for measurement, a weight of three points given to each. To measure individual difference in performance, the weights three, two, and one were assigned to good, fair, and poor, respectively. Thus a student ranking good in any factor received nine points; fair, six points; and poor, three points. This made the highest possible score forty-five points, and the lowest possible score fifteen

⁹S. W. McKinley, "A Scale for Measuring Musical Achievement," (Unpublished Master's Thesis, Western State Teachers College, Colorado, 1935).

¹⁰H. A. Vandercook, Teaching the High School Band (Chicago, 1926), p. 86.

points. To enhance the measurement of tone, it was sub-divided into quality, attack, and release; likewise, playing position was sub-divided into posture, embouchure, and hands. In an attempt to obtain greater objectivity, definite degrees of achievement in range, technique, and time were assigned to the classification of good, fair, and poor.

The test¹¹ was given to a number of instrumental players and was found to give accurate measurement of success; however, no claim is made as to its validity or reliability.

Testing the experiment. Three public school instrumental teachers were selected as judges. They were given explicit directions and practice in using the test and were asked not to collaborate while grading the pupils. Each pupil was given a ten-minute warm up period; then appeared before the assembled judges and played an established routine.¹²

In tabulating the results of the test, it was necessary to interpret the results of the three judges on each factor measured into a final score. If two judges awarded the same grade, that grade was accepted as the final score; if the judges awarded different grades, the median score was determined as the final score.

¹¹See Appendix.

¹²See Appendix.

CHAPTER IV

RESULTS OF THE EXPERIMENT

In this chapter the results of the experiment, as measured by the achievement test, will be presented and analyzed in the following order: (1) The group findings; (2) Class (combined groups) findings; and (3) General observations.

Group findings. In Group A, the tone achievement range is 3 to 7; the mean is 4.4. The tone achievement range of Group B is 4 to 9, and the mean 7.1. It will be noted that the mean of Group B exceeds that of Group A by a difference of 2.7. In computing the standard error of difference of these means, the difference is found to be .640. This signifies that there are 100 chances in 100 of the true difference being greater than zero, in favor of Group B.

The "playing range" of Group A has a score range of 3 to 9, with a mean of 4.8; whereas, Group B has a score range of 3 to 9, and a mean of 6.6. The standard error of difference is .892, with 98 chances in 100 of the difference being greater than zero, in favor of Group B.

The technique scores of Group A range from 3 to 9; the mean is 4.2. Group B ranges from 3 to 9, but has a mean of 6.6.

of 6.9, exceeding that of Group A by 2.7. The standard error of difference is found to be .905, or 100 chances in 100 that the true difference is greater than zero.

In time (a factor tested) Group A ranges from 3 to 9, with a mean of 5.1. Group B, with a score range of 3 to 9, had a mean of 7.8. This exceeds Group A by 2.7. The standard error of difference between these two means is 1.02, which signifies that there are 99 chances in 100 that the mean of Group B exceeds that of Group A.

The playing position scores of Group A range from 3 to 8; the mean is 5.6; whereas, Group B ranges from 7 to 9, with a mean of 8. The actual difference is 2.4. The standard error of difference in this factor is .463, or 100 chances in 100 that the true difference is greater than zero.

It will be noticed that Group B excels in each of the five factors tested. The means exceed those of Group A from 1.8 to 2.7, and only in range and time was the measure of reliability found to be less than 100 chances in 100. Table VII, page 35, shows the achievement scores on each of the factors tested. Since the class is small, it is advantageous to study the results by means of graphical representation. Graph III, page 36, shows a graphical picture of the ranked achievement of the groups in each factor tested.

The scores of the five factors were added to make the total achievement score of each pupil. If the final score

RANKED ORDER OF PUPILS IN THE
SEPARATE FACTORS MEASURED
BY ACHIEVEMENT TEST AND THE MEAN SCORE OF EACH

TABLE VII
RANKED ORDER OF PUPILS IN THE SEPARATE FACTORS MEASURED
BY ACHIEVEMENT TEST AND THE MEAN SCORE OF EACH

GROUP A						GROUP B					
Pupil Number	Tone	Range	Tech.	Time	Position	Pupil Number	Tone	Range	Tech.	Time	Position
1	7	9	9	9	8	1	9	9	9	9	9
2	6	6	6	9	8	2	9	9	9	9	9
3	5	6	6	6	6	3	8	9	9	9	9
4	4	6	3	6	6	4	8	6	9	9	8
5	4	6	3	6	6	5	7	6	9	9	8
6	4	3	3	3	5	6	7	6	6	9	8
7	4	3	3	3	5	7	7	6	6	9	8
8	4	3	3	3	5	8	7	6	6	6	7
9	3	3	3	3	4	9	5	6	3	6	7
10	3	3	3	3	3	10	4	3	3	3	7
Mean	4.4	4.8	4.2	5.1	5.6	Mean	7.1	6.6	6.9	7.8	8
Diff.							+2.7	+1.8	+2.7	+2.7	+2.4
S.D.	1.20	1.989	1.40	2.343	1.496		1.51	1.800	2.34	1.974	.775
σ Diff.							.640	.892	.905	1.02	.463
C.R.							4.22	2.02	2.98	2.64	5.18

C.R. 4.22 means that there are 100 chances in 100 that the true difference is more than zero in favor of Group B.

C.R. 2.02 means that there are 98 chances in 100 that the true difference is more than zero in favor of Group B.

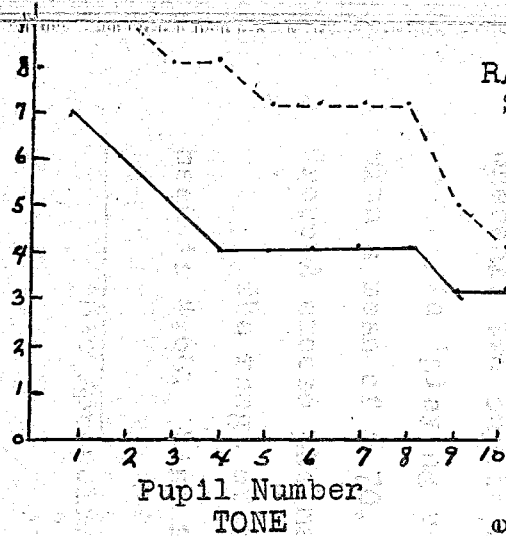
C.R. 2.98 means that there are 100 chances in 100 that the true difference is more than zero in favor of Group B.

C.R. 2.64 means that there are 99 chances in 100 that the true difference is more than zero in favor of Group B.

C.R. 5.18 means that there are 100 chances in 100 that the true difference is more than zero in favor of Group B.

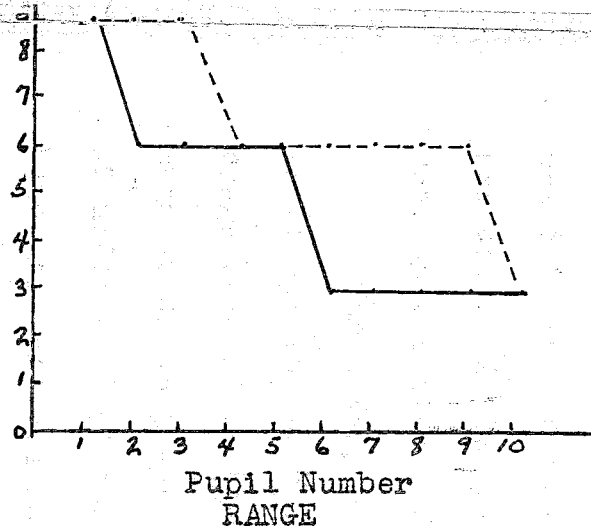
RANKED ORDER OF PUPILS IN THE SEPARATE FACTORS MEASURED IN ACHIEVEMENT TEST

Achievement Range



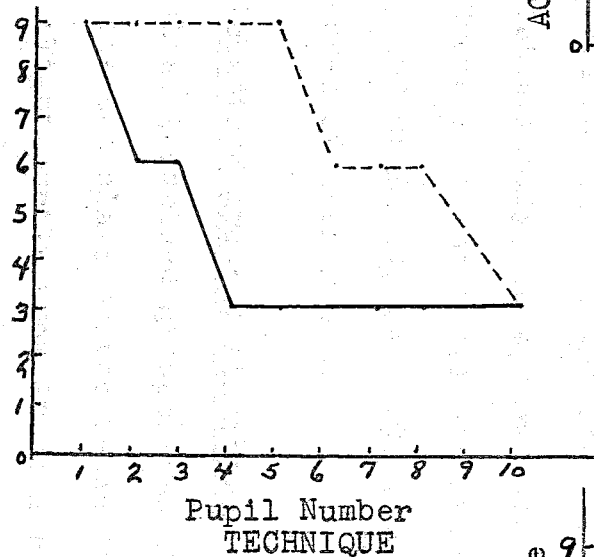
Pupil Number
TONE

ACHIEVEMENT SCORE



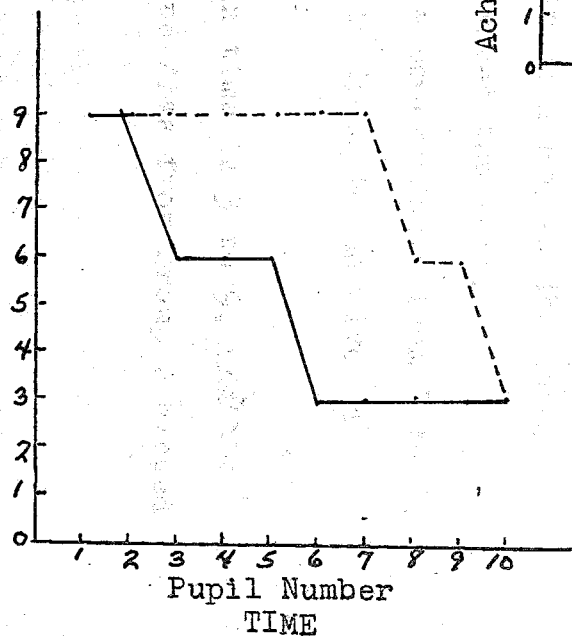
Pupil Number
RANGE

Achievement Range



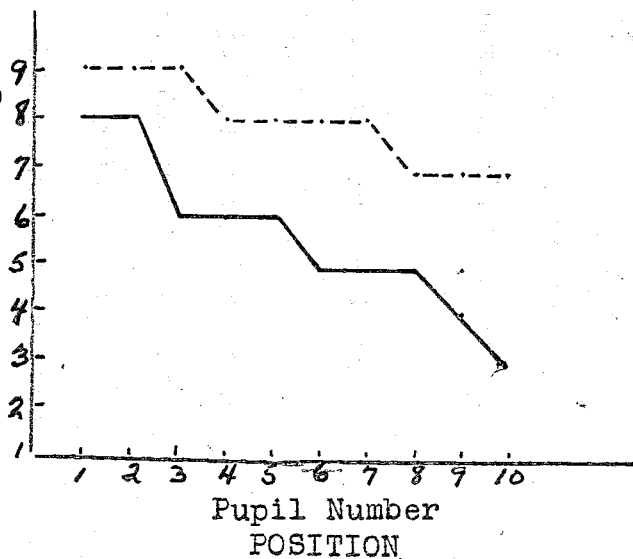
Pupil Number
TECHNIQUE

Achievement Range



Pupil Number
TIME

Achievement Range



Pupil Number
POSITION

Group A = ———
Group B = - - - - -

was different from each judge, the median of the three scores was used. If two of the three judges agreed, that score was used as the final score.¹

The total achievement scores of Group A range from 18 to 33; the mean is 24.3. The total scores of Group B range from 23 to 45, with a mean of 36.3. Here we find the mean of Group B exceeding Group A by 12. The standard error of difference of the two means is 2.96, the reliability being 100 chances in 100 that the true difference is greater than zero. Statistically, this shows the superiority of Group B over Group A in the total achievement scores. Table VIII, page 38, and Graph IV, page 39, show the ranked total achievement scores of each group.

Class (combined groups) findings. To further analyze results, the class (combined groups) was statistically treated. In tone the class scores range from 3 to 9; the mean is 5.75. Eight pupils from Group B exceed the mean; whereas, two pupils from Group A exceed the mean.

In "playing range" the class scores range from 3 to 9, with a mean of 5.70. Nine pupils in Group B and five in Group A exceed the mean.

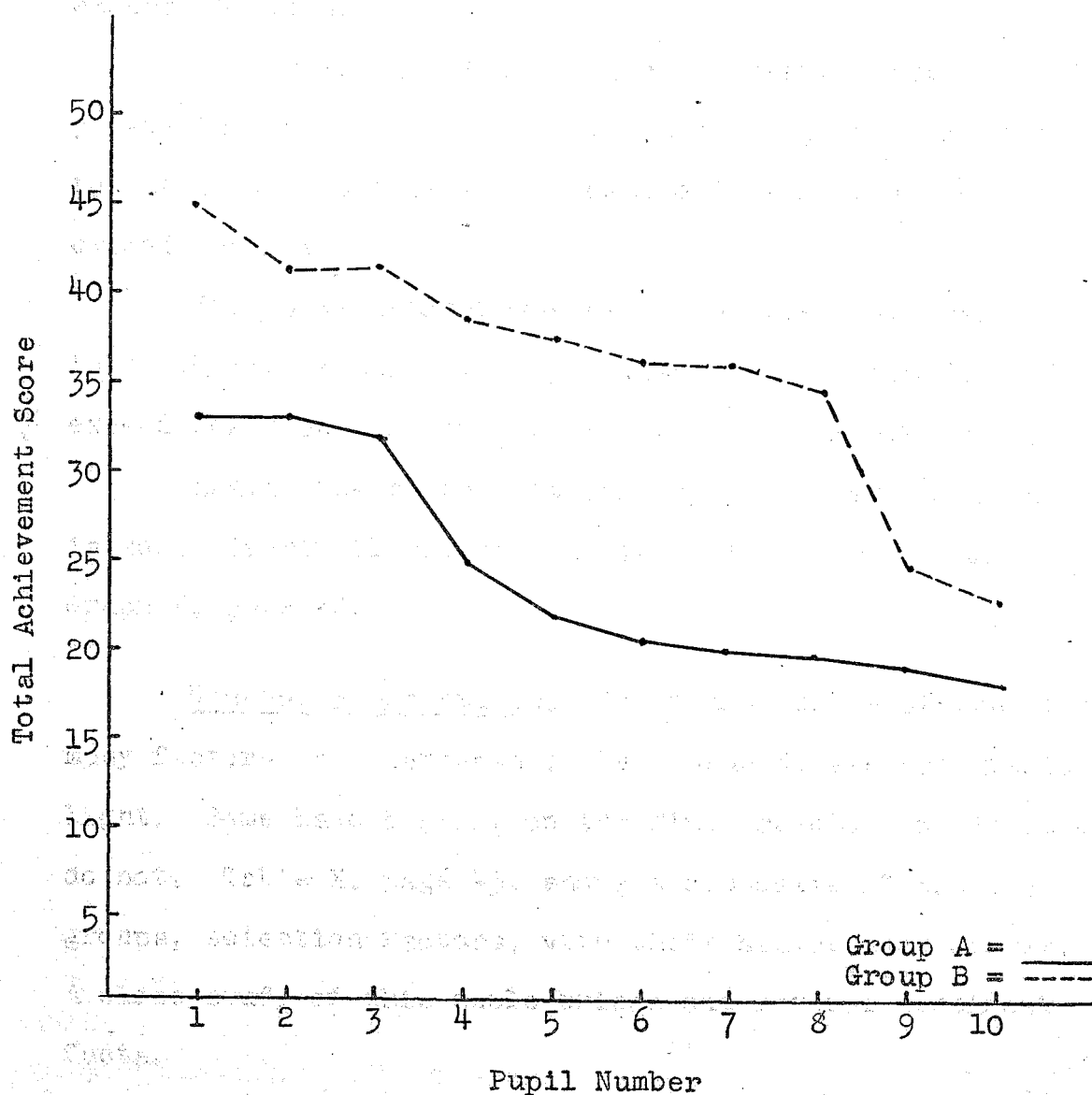
The range of class scores in time is 3 to 9, and the mean is 4.65. Nine from Group B and five from Group A exceed the mean.

¹See Appendix.

TABLE VIII
RANKED ORDER OF TOTAL ACHIEVEMENT SCORES

GROUP A		GROUP B	
Pupil Number	Total Achievement Score	Pupil Number	Total Achievement Score
1	33	1	45
2	33	2	42
3	32	3	42
4	25	4	39
5	22	5	38
6	21	6	37
7	20	7	37
8	20	8	35
9	19	9	25
10	18	10	23
Mean	24.3	Mean	36.3
Diff.			12
S.D.	5.763		6.768
σ Diff.			2.964
C. R.			4.08

C. R. 4.08 means that there are 100 chances in 100 that the true difference is more than zero in favor of Group B.



Two pupils from Group B failed to meet the mean achievement score of 30.2. (Pupils 9 and 10.)

GRAPH IV
RANKED ORDER OF TOTAL ACHIEVEMENT SCORES
FOR GROUPS A AND B

the mean.

The class scores in technique range from 3 to 9; the mean is 5.55. Eight from Group B and three from Group A exceed the mean.

In playing position, the class scores range from 3 to 9, and the mean is 6.8. All ten pupils of Group B exceed the mean in this factor; whereas, only two from Group A exceed the mean.

The total achievement scores of the class range from 18 to 45 with a mean of 30.3. Eight pupils from Group B exceed the mean, but only three from Group A exceed it.

Again, the superiority of Group B is evident. This is most clearly illustrated in Table IX, page 41, and Graph V, page 42.

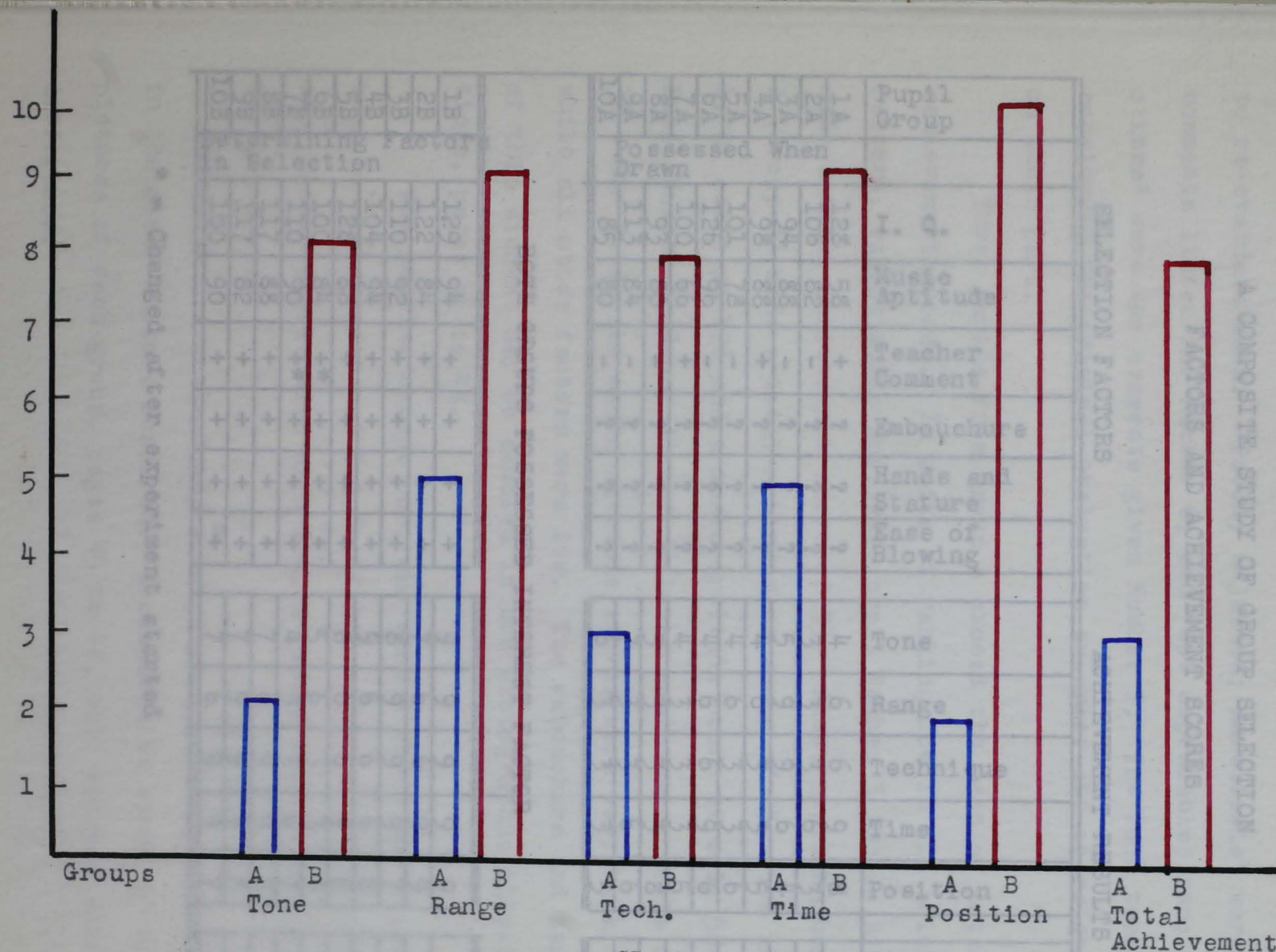
General observations. As in most cases of research, many factors, not intended to be measured, are brought to light. Some have bearing on the final results, while others do not. Table X, page 43, shows a composite of the two groups, selection factors, with their achievement scores. A close study of this table brings out several pertinent facts.

Two pupils from Group B failed to reach the mean achievement score of 30.2; they are Number 6 and 7. These pupils appeared unreliable throughout the experiment.

TABLE IX
 RANKED ORDER OF CLASS (COMBINED GROUPS) IN ALL
 FACTORS MEASURED IN THE ACHIEVEMENT TEST
 DESIGNATING THE GROUP OF EACH

Pupil Number	Group	Tone	Group	Range	Group	Tech.	Group	Time	Group	Posit.	Group	Achievement Total
1	B	9	B	9	B	9	B	9	B	9	B	45
2	B	9	B	9	B	9	B	9	B	9	B	42
3	B	8	B	9	B	9	B	9	B	9	B	42
4	B	8	A	9	B	9	B	9	B	8	B	39
5	B	7	B	6	B	9	B	9	B	8	B	38
6	B	7	B	6	A	9	B	9	B	8	B	37
7	B	7	B	6	B	6	B	9	B	8	B	37
8	B	7	B	6	B	6	A	9	A	8	B	35
9	A	7	B	6	B	6	A	9	A	8	A	33
10	A	6	B	6	A	6	B	6	B	7	A	33
11	B	5	A	6	A	6	B	6	B	7	A	32
12	A	5	A	6	B	3	A	6	B	7	B	25
13	B	4	A	6	B	3	A	6	A	6	A	25
14	A	4	A	6	A	3	A	6	A	6	B	23
15	A	4	B	3	A	3	B	3	A	6	A	22
16	A	4	A	3	A	3	A	3	A	5	A	21
17	A	4	A	3	A	3	A	3	A	5	A	20
18	A	4	A	3	A	3	A	3	A	5	A	20
19	A	3	A	3	A	3	A	3	A	4	A	19
20	A	3	A	3	A	3	A	3	A	3	A	18
Mean		5.75		5.70		5.55		4.65		6.8		30.3

Number of Pupils



GRAPH V

NUMBER OF PUPILS EXCEEDING THE
MEAN IN EACH FACTOR MEASURED

TABLE X

A COMPOSITE STUDY OF GROUP SELECTION
FACTORS AND ACHIEVEMENT SCORES

SELECTION FACTORS								ACHIEVEMENT RESULTS							
Pupll Group		I. Q.	Music Aptitude	Teacher Comment	Embouchure	Hands and Stature	Ease of Blowing		Tone	Range	Technique	Time	Position		Final Score
1A	Possessed When Drawn	128	58	+	?	?	?		4	6	6	9	8		33
2A		106	82	-	?	?	?		3	3	3	6	3		18
3A		94	88	-	?	?	?		5	9	9	6	4		33
4A		98	88	+	?	?	?		4	6	3	3	5		21
5A		101	78	-	?	?	?		4	6	3	3	6		22
6A		126	96	-	?	?	?		4	6	6	9	6		32
7A		100	66	+	?	?	?		4	3	3	3	5		19
8A		93	80	-	?	?	?		3	3	3	3	8		20
9A		113	84	-	?	?	?		7	3	3	6	6		25
10A		85	80	-	?	?	?		6	3	3	3	5		20
BOTH GROUPS POSSESSED INTEREST FACTOR															
1B	Determining Factors in Selection	129	94	+	+	+	+		9	9	9	9	9		45
2B		122	84	+	+	+	+		7	6	6	9	9		37
3B		110	92	+	+	+	+		8	9	9	9	7		42
4B		104	94	+	+	+	+		9	6	6	6	8		35
5B		128	88	+	+	+	+		8	6	6	9	8		37
6B		100	84	++	+	+	+		5	6	3	3	9		25
7B		110	90	++	+	+	+		4	3	3	6	7		23
8B		117	88	+	+	+	+		7	6	9	9	8		39
9B		117	82	+	+	+	+		7	9	9	9	8		42
10B		100	90	+	+	+	+		7	6	9	9	7		38

* = Changed after experiment started

pictures of each group, pages 45 to 49, will indicate this difference.

Without indication as to why, the room teachers were asked to re-evaluate them. "Poorly adjusted; unreliable" were the comments listed for Number 6, and "Not dependable; annoys others" were the comments given Number 7. The room teachers considered the original evaluation an error and oversight on their part.

Three pupils from Group A exceed the mean of total achievement scores. In spite of ranking low in all selection factors, except music aptitude, pupil Number 3 (Group A) made a total achievement score of 33. Also, pupil Number 1 (Group A) made a total achievement score of 33, with an I. Q. score of 128 and a music aptitude score of only 58. Pupil Number 6 (Group A) made a total achievement score of 32. Her I. Q. and music aptitude scores were very high, while all other factors were low. The embouchure and hands of this student may be studied in the photographic illustrations, pages 45 to 48.

All pupils, except one, who ranked above the class mean in achievement had I.Q.'s of 100 or above. With few exceptions, pupils with high I.Q.'s ranked high in all factors tested.

Group B exceeds Group A in playing position more than in the other factors measured. A comparative study of the pictures of each group, pages 45 to 48, will enhance this difference.

NO. I - PHOTOGRAPHIC ILLUSTRATION - GROUP "A"



No. 1



No. 2



No. 3



No. 4



No. 5



No. 6



No. 7



No. 8



No. 9



No. 10

NO. II - PHOTOGRAPHIC ILLUSTRATION - GROUP "B"



No 1



No 2



No 3



No 4



No 5



No 6



No 7



No 8



No 9



No 10

NO. III — PHOTOGRAPHIC ILLUSTRATION — GROUP "A"



No 1



No 2



No 3



No 4



No 5



No 6



No 7



No 8



No 9



No 10

NO. IV — PHOTOGRAPHIC ILLUSTRATION — GROUP "B"



No 1



No 2



No 3



No 4



No 5



No 6



No 7



No 8



No 9



No 10

Only one pupil with a low music aptitude score (Number 1, Group A) exceeds the total achievement score mean.

Nine of the eleven pupils who exceed the total achievement score mean have favorable teacher comments, while four below the mean have favorable comments. Two (Numbers 6 and 7, Group B) of the four were re-evaluated with unfavorable comments.

From these observations we might assume that all selection factors are of importance. It appears that the more factors used in selecting beginners, the more accurately predictions can be made. ~~X~~ To what extent each factor, namely I.Q., music aptitude, room teachers' comments, embouchure, hands and stature, and ease of blowing, aids in predicting success, calls for further research.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary. It was the purpose of this experiment to discover, for the purpose of guidance, whether the application of scientific factors in selecting beginning instrumental pupils, will insure a greater degree of success in playing the instrument.

In related literature, several writers in the field of instrumental music recommend several factors to be used in selecting beginning instrumental players; but little experimentation has been done.

It was decided to use the experimental method and proceed as follows: (1) Select two groups of instrumental pupils; one selected with interest as the only factor (Group A); the other selected with the aid of several recommended scientific factors (Group B); (2) Give the two groups equalized instruction on the clarinet for a given period of time; (3) Administer an achievement test; (4) Interpret the results as a measure of success.

The experiment was conducted in the Laboratory School, Indiana State Teachers College. A group of ten pupils from grades 5B, 5A, 6B, and 6A were drawn by chance, with interest in playing a clarinet as the only selection factor. Another group of ten was selected by the use of I.Q.'s (the Otis

Self-Administering Mental Aptitude Test, Intermediate Form, was used), music aptitude scores (the Pan-American Music Aptitude Test was used), room teachers' comments, and physical adaptation to the clarinet. Adaptation to the clarinet consisted of two forty-five minute periods wherein the pupils had an opportunity to work with a mouthpiece and the assembled clarinet. Only those pupils who demonstrated good embouchure, ease of tone production, adept hands and adequate stature were selected.

Group A was given two forty-five minute periods of instructions in order to equalize the instructional time on the clarinet of the two groups.

The two groups were combined as one class and were given equalized instruction for four weeks, after which an achievement test was devised and administered to the class of twenty pupils to determine which group had achieved greater success in playing the clarinet.

The results of the experiment were computed and show:

1. The mean of Group B exceeds the mean of Group A in each factor tested.
2. The mean of the total achievement scores of Group B exceeds the mean of the total achievement scores of Group A.
3. A greater number of pupils from Group B exceed the

mean of the class (combined groups) than the number from Group A.

4. All factors used in the selection of Group B appear to contribute to success.

Conclusions. This experiment has one particular shortcoming that could not be avoided: the extremely small number of pupils used. However, the following can be concluded:

1. In tone, range, technique, time, and playing position, Group B, the group selected by Method II, attained greater success in playing the clarinet than Group A, the group selected by Method I.
2. Group B, the group selected by Method II, exceeded Group A, the group selected by Method I, in total achievement scores.
3. A greater number of pupils from Group B exceeded the mean of the class (combined groups) than the number from Group A.
4. All factors used in the selection of Group B appeared to contribute to success.
5. Granting that interest aids in the success of any venture, interest, alone, as shown in this experiment, does not insure success in playing the clarinet.
6. Finally, the application of scientific factors in

selecting beginning instrumental pupils, will insure a greater degree of success in playing the instrument.

BIBLIOGRAPHY

1. Smith, J. H. The Psychology of Music. New York: Macmillan, 1921.
2. Wallace, John. The Psychology of Music. New York: Macmillan, 1921.
3. Gifford, Mary. The Psychology of Music. New York: Macmillan, 1921.
4. Long, Dr. Charles J. The Psychology of Music. New York: Macmillan, 1921.
5. Larson, William S. "Measurements of Musical Talent and the Prediction of Success in Instrumental Music." University of Iowa Studies in Psychology, 15: 1-27, 1931.
6. "Some Trends in Music Education," Educational Review, 1936, 20, May, 1936.

BIBLIOGRAPHY

A. BOOKS

- Hindsley, Mark H., School Band and Orchestra Administration. New York: Boosey and Hawkes, Inc., 1940. 107 pp.
- Maddy, J. E., School Bands--How They May Be Developed. New York: National Bureau for the Advancement of Music, 1932. 68 pp.
- Prescott, Gerald R., and Lawrence W. Chidester, Getting Results with School Bands. Chicago: Carl Fischer, Inc., 1938. 273 pp.
- Vandercook, H. A., Teaching the High School Band. Chicago, 1926. 86 pp.
- Wright, J. P., What Instrument? Cleveland: H. N. White Company, 1927. 23 pp.

B. PERIODICAL ARTICLES

- Burns, S. T., "The Value of Prognostic Tests for Instrumental Pupils," School Music, 31:6-9, March, 1931.
- Gaines, Robert L., "Guidance and Instrumental Music," Music Education Journal, 29:21-22, January, 1943.
- Griffith, Ruth, "The Music Supervisor and the Guidance Program," Music Educators Journal, 12:20-21, September, 1945.
- Lamp, Dr. Charles J., and Noel Keys, "Can Aptitude for Specific Musical Instruments Be Predicted?", Journal of Educational Psychology, 26:587-96, November, 1935.
- Larson, William S., "Measurement of Musical Talent for the Prediction of Success in Instrumental Music," University of Iowa Studies in Psychology, 13:33-37, 1930.
- _____, "Some Trends in Music Education," Education, 23:513-20, May, 1936.

- Meyers, A. C., "Come Blow Your Horn--But Which One?", Music Educators Journal, 28:29-30, January, 1942.
- Mursell, J. L., "The Psychology of Music," Psychological Bulletin, 29:218-41, 1932.
- Revelli, William D., "Instrumental Adaptation and Aptitude Tests," The Etude, 59:601-2, September, 1941.
- Stelzer, Theodore G., "Construction, Interpretation, and Use of a Sight Reading Scale in Organ Music, with an Analysis of Organ Playing into Fundamental Abilities," Journal of Experimental Education, 7:35-43, 1938.
- Watkins, William J., "Overture to Extensive Instrumental Work," Nations Schools, 24:24-7, August, 1939.
- Weber, Fred, "Why Create Dead-Wood?", Educational Music Magazine, 31:19-20, September, 1945.

C. UNPUBLISHED MATERIALS

- McKinley, S. W., "A Scale for Measuring Musical Achievement." Unpublished Masters Thesis, Western State Teachers College, Colorado, 1935. 64 pp.
- Watkins, J. G., "Objective Measurement of Instrumental Performance." Unpublished Doctor's dissertation, Columbia University, New York, 1942. 88 pp.

APPENDIX

I am now going to ask you to choose one of the three choices which I have written down for you. Please raise your hand when you have chosen.

First Choice _____

Second Choice _____

Third Choice _____

(Please fill out and return. If there are any questions, please raise your hand and wait for the teacher to answer your questions.)

APPENDIX A

INSTRUMENTAL INFORMATION

FORM

Name _____ Grade _____

Age _____

Parent or Guardian's Name _____

Address _____

Phone _____

Do you have an instrument in your home? Yes _____ No _____

If Yes, which ones? _____

Have you had previous instruction on any instrument?

Yes _____ No _____ If Yes, which ones? _____

I am interested in joining the band or orchestra and wish to join one of the beginning instrumental classes. Yes__ No__

My choice of instrument is as follows:

First Choice _____

Second Choice _____

Third Choice _____

(Student fill out and return. If there are any questions please raise your hand and wait for the teacher to come to your seat.)

Instrumental Department
Laboratory School
Texas House, Dallas

PARENT APPROVAL FORM

March 18, 1946

Dear Parent,

A clarinet class is being organized in the fifth and sixth grades. Only a limited number will be admitted to the class. Your child has expressed a desire to join this group, but we desire your written approval.

The instructor of this class will be Mr. Harold Rogers. This class will be an experiment as part of Mr. Rogers' work on his masters degree at Indiana State Teachers College. The class will be divided into two teams, each chosen differently. Therefore, it is necessary that we choose students upon whom we can depend to be present at 12:45 P.M. promptly each school day for the next four weeks.

The Laboratory School is furnishing the clarinets; Mr. Rogers is furnishing the mouthpieces, reeds, and instruction books. All we are asking the student to furnish is his presence daily.

_____ has been considered as a possible member of this clarinet class. If you as a parent or guardian are willing to have him (or her) in this class and accept the responsibility of having him (or her) present and on time each school day at 12:45 P.M., please sign below and return to the home room teacher.

Parent or Guardian

Sincerely yours,

RALPH G. MILLER

Instrument Supervisor
Laboratory School
Terre Haute, Indiana

60

Student's Name _____

City _____ School _____

Length of time student has played instrument _____

DIRECTIONS: Judge will place a check-mark in the spaces which best represent the student's achievement.

	Good (3 points)	Fair (2 points)	Poor (1 point)
TONES			
Quality	X		
Attack	X		
Release	X		
PHRASE			
Flow	X		
Range	X		
TECHNIQUE			
MM 130-160	X		
MM 100-130		X	
MM 70-100			X
TIME			
Errors 3 or Less	X		
Errors 4 to 9		X	
Errors 10-19			X
PLAYING POSITION			
Posture	X		
Embouchure	X		
Hands	X		
TOTAL	6	6	3

SCORE 23

Judge's Signature _____

INSTRUMENTAL ACHIEVEMENT TEST

Student's Name _____ Grade in School _____

City _____ School _____

Length of time student has played instrument _____

DIRECTIONS: Judge will place a check mark in the spaces which best represent the student's achievement.

TONE	Good (3 points)	Fair (2 points)	Poor (1 point)
Quality	X		
Attack	X		
Release	X		
			Total 6

RANGE	G to E (9 points)	G to G (6 points)	G to C (3 points)
	X		
			Total 6

TECHNIQUE	MM 130-160 (9 points)	MM 100-130 (6 points)	MM 70-100 (3 points)
		X	
			Total 3

TIME	Errors 3 or Less (9 points)	Errors 4 to 9 (6 points)	Errors 10-Up (3 points)
	X		
			Total 3

PLAYING POSITION

Posture	(3 points)	(2 points)	(1 point)
		X	
Embouchure	(3 points)	(2 points)	(1 point)
		X	
Hands	(3 points)	(2 points)	(1 point)
		X	
			Total 5

TOTAL SCORE 23

Judge's Signature _____

COMPOSITE OF SCORES -- JUDGE #1

PUPIL		TONE				RANGE		TECH.		TIME		POSITION				TL	SC
Number	Group	Quality	Attack	Release	Score		Score		Score		Score	Posture	Embouchure	Hands	Score		Final
1	A	2	1	1	4		6		6		9	3	3	3	9		34
2	A	1	1	1	3		3		3		6	1	1	1	3		18
3	A	2	2	1	5		9		9		6	2	1	1	4		33
4	A	2	1	1	4		6		3		3	2	1	1	5		21
5	A	2	1	1	4		6		3		3	2	1	3	6		22
6	A	1	3	1	5		6		6		9	3	2	1	6		32
7	A	1	2	1	4		3		3		3	3	1	2	6		19
8	A	1	1	1	3		3		3		3	3	3	2	8		20
9	A	2	3	2	7		3		3		6	3	2	1	6		25
10	A	2	2	2	6		3		3		3	3	1	1	5		20
1	B	3	3	3	9		9		9		9	3	3	3	9		45
2	B	3	2	2	7		6		6		9	3	3	3	9		37
3	B	3	3	2	7		9		9		9	3	3	2	8		43
4	B	3	3	3	9		6		6		6	3	3	3	9		36
5	B	3	3	3	9		6		6		9	3	2	3	8		38
6	B	2	1	1	4		6		3		3	3	3	3	9		25
7	B	1	1	2	4		3		3		6	2	3	2	7		23
8	B	3	2	2	7		6		9		9	3	3	3	9		40
9	B	3	2	2	7		9		9		9	3	3	3	9		43
10	B	2	2	3	7		6		9		9	3	2	2	7		38

COMPOSITE OF SCORES -- JUDGE #2

PUPIL		TONE				RANGE		TECH.		TIME		POSITION				TL.	SC.
Number	Group	Quality	Attack	Release	Score		Score		Score		Score	Posture	Embouchure	Hands	Score		Final
1	A	2	1	2	5		6		6		9	3	2	3	8		33
2	A	1	1	1	3		3		3		6	2	1	1	4		19
3	A	2	2	1	5		9		9		6	2	1	1	4		33
4	A	2	1	2	5		6		3		3	2	2	1	5		22
5	A	1	1	2	4		6		3		3	2	1	2	5		21
6	A	1	2	1	4		6		6		9	3	2	1	6		31
7	A	1	2	1	4		3		3		3	2	1	2	5		18
8	A	1	1	2	4		3		3		3	3	3	1	7		20
9	A	2	2	2	6		3		3		6	3	2	1	6		24
10	A	2	2	2	6		3		3		3	2	1	1	4		19
1	B	3	3	3	9		9		9		9	3	3	3	9		45
2	B	3	2	2	7		6		6		9	3	3	2	8		36
3	B	3	3	3	9		9		9		9	2	2	2	6		42
4	B	3	3	2	8		6		6		6	3	3	2	8		34
5	B	3	2	2	7		6		6		9	3	3	2	8		36
6	B	2	2	1	5		6		3		3	3	3	3	9		24
7	B	1	1	1	3		3		3		6	3	3	1	7		22
8	B	3	2	2	7		6		9		9	3	3	2	8		39
9	B	2	2	2	6		9		9		9	3	3	2	8		41
10	B	2	3	2	7		6		9		9	3	2	1	6		37

COMPOSITE OF SCORES -- JUDGE #3

PUPIL		TONE				RANGE		TECH.		TIME		POSITION				TL.	SC.
Number	Group	Quality	Attack	Release	Score		Score		Score		Score	Posture	Embouchure	Hands	Score		Final
1	A	2	1	1	4		6		6		9	3	2	2	7		32
2	A	1	1	1	3		3		3		6	1	1	1	3		18
3	A	2	2	2	6		9		9		6	2	1	1	4		34
4	A	2	1	1	4		6		3		3	2	1	1	5		21
5	A	2	1	1	5		6		3		3	2	1	3	6		23
6	A	1	2	1	4		6		6		9	3	2	2	7		32
7	A	2	2	1	5		3		3		3	2	1	2	5		19
8	A	1	1	1	3		3		3		3	3	3	2	8		20
9	A	2	3	3	8		3		3		6	2	2	2	6		26
10	A	2	2	2	6		3		3		3	3	1	2	6		21
1	B	3	3	3	9		9		9		9	3	3	2	8		44
2	B	3	2	2	7		6		6		9	3	3	3	9		37
3	B	2	3	3	8		9		9		9	3	2	2	7		42
4	B	3	3	3	9		6		6		6	3	3	2	8		35
5	B	2	3	3	8		6		6		9	3	2	3	8		37
6	B	2	2	2	6		6		3		3	3	3	2	8		26
7	B	1	2	2	5		3		3		6	2	3	1	6		23
8	B	3	2	2	7		6		9		9	3	3	2	8		39
9	B	2	3	3	8		9		9		9	3	2	2	7		42
10	B	3	2	3	8		6		9		9	3	2	2	7		39

FINAL ACHIEVEMENT SCORES

Pupil	Group	Judge #1 Final Score	Judge #2 Final Score	Judge #3 Final Score	Pupil Final Score
1	A	34	33	32	33
2	A	18	19	18	18
3	A	33	33	34	33
4	A	21	22	21	21
5	A	22	21	23	22
6	A	32	31	32	32
7	A	19	18	19	19
8	A	20	20	20	20
9	A	25	24	26	25
10	A	20	19	21	20
1	B	45	45	44	45
2	B	37	36	37	37
3	B	43	42	42	42
4	B	36	34	35	35
5	B	38	36	37	37
6	B	25	24	26	25
7	B	23	22	23	23
8	B	40	39	39	39
9	B	43	41	42	42
10	B	38	37	39	38

APPENDIX B

LESSON PLANS

The lesson plans that follow are in outline form and do not include a word description of the teaching procedure. They are presented merely to show the extent of materials covered. It should be remembered that each pupil had a mouthpiece, but only one instrument was available for each two pupils. After lessons one and two were completed, and exercises from the book were begun, one group played the exercise while the other group sang it with "la." The group that sang would then take the instrument and play the exercise while the other group sang. This procedure was followed throughout the entire experiment. No individual help was given to any pupil in the class. If a particular pupil was having trouble with an exercise, it was called to the attention of the class and all rehearsed it. The exercises listed in the lesson plans are from Rubank Elementary Method for Clarinet, by N. W. Hovey. Each exercise introduced was studied and analyzed before either group attempted to play it.

LESSON I

I. PURPOSE:

To develop the basic fundamentals of tone production.

II. PROCEDURE:

- A. Correct placement of mouthpiece in mouth.
- B. Blowing with mouthpiece, without instrument;
check for errors with hand mirror.
- C. Blowing with mouthpiece on the instrument;
check for errors with hand mirror.
- D. Explanation and use of diaphragm in producing
a tone: first with mouthpiece and then with
the assembled instrument.
- E. Explanation and use of tongue in attacking a
tone: with mouthpiece alone and then with the
instrument assembled.
- F. Explanation and use of release of tone: with
mouthpiece and then with the instrument fully
assembled.

LESSON II

I. PURPOSE:

To review the fundamentals of tone production and develop knowledges in music notation.

II. PROCEDURE:

- A. Review lesson one.
- B. Introduction of clef signs, names of lines and spaces, bars, time signatures, whole notes, and whole rests.
- C. Review lesson one.
- D. Correct posture in playing.
- E. Use of the foot in counting time.

LESSON III

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson one.
- B. Review lesson two.
- C. Exercise one, lesson one, in the instruction book.
- D. Exercise two, lesson one, in the instruction book.

LESSON IV

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson one.
- B. Review lessons two and three.
- C. Exercise three, lesson one, in the instruction book.
- D. Exercise four, lesson one, in the instruction book.

LESSON V

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson four.
- B. Exercise five, lesson one, in the instruction book.
- C. Exercise six, lesson one, in the instruction book.

LESSON VI

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson five.
- B. Exercise seven, lesson one, in the instruction book.
- C. Exercise eight, lesson one, in the instruction book.
- D. Exercise nine, lesson one, in the instruction book.

LESSON VII

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson six.
- B. Exercise ten, lesson one, in the instruction book.
- C. Exercise eleven, lesson one, in the instruction book.
- D. Exercise twelve, lesson one, in the instruction book.

LESSON VIII

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

A. Review lesson one.

B. Review lesson two.

C. Review exercises one to twelve, lesson one, in the instruction book.

LESSON IX

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson one.
- B. Review lesson two.
- C. Exercise one, lesson two, in the instruction book.
- D. Exercise two, lesson two, in the instruction book.
- E. Exercise three, lesson two, in the instruction book.

LESSON X

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson two.
- B. Review lesson nine.
- C. Exercise four, lesson two, in the instruction book.
- D. Exercise five, lesson two, in the instruction book.
- E. Exercise six, lesson two, in the instruction book.

LESSON XI

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson ten.
- B. Exercise seven, lesson two, in the instruction book.
- C. Exercise eight, lesson two, in the instruction book.
- D. Exercise nine, lesson two, in the instruction book.
- E. Exercise ten, lesson two, in the instruction book.

LESSON XII

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson eleven.
- B. Exercise eleven, lesson two, in the instruction book.
- C. Exercise twelve, lesson two, in the instruction book.
- D. Review exercises one to twelve, lesson two, in the instruction book.

LESSON XIII

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson twelve.
- B. Exercise two, lesson three, in the instruction book.
- C. Exercise three, lesson three, in the instruction book.
- D. Exercise four, lesson three, in the instruction book.

LESSON XIV

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

A. Review lesson thirteen.

B. Exercise five, lesson three, in the instruction book.

C. Exercise six, lesson three, in the instruction book.

D. Exercise seven, lesson three, in the instruction book.

LESSON XV

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson fourteen.
- B. Exercise eight, lesson three, in the instruction book.
- C. Exercise nine, lesson three, in the instruction book.
- D. Review exercises two to nine, lesson three, in the instruction book.

LESSON XVI

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review exercises two to nine, lesson three, in the instruction book.
- B. Exercise one, lesson four, in the instruction book.
- C. Exercise eight, lesson four, in the instruction book.
- D. Exercise nine, lesson four, in the instruction book.
- E. Exercise ten, lesson four, in the instruction book.

LESSON XVII

I. PURPOSE:

To review knowledges and induce activities which will develop new skills.

II. PROCEDURE:

- A. Review lesson sixteen.
- B. Review exercises two, three, six, and eight, lesson three, in the instruction book.
- C. Review lessons one and two.

LESSON XVIII

I. PURPOSE:

To review knowledges and skills.

II. PROCEDURE:

A. Review lesson one.

B. Review lesson two.

C. Review exercises two, three, six, and eight, lesson three, in the instruction book.

D. Review exercises eight, nine, ten, lesson four, in the instruction book.

1. Review lesson one.

2. Review lesson two.

3. Review lesson three.

4. Play exercises two, three, six, and eight, lesson three, in the instruction book.

5. Play exercises eight, nine, ten, lesson four, in the instruction book.

6. Review lesson four.

ACHIEVEMENT TEST

ROUTINE

I. PURPOSE:

To evaluate each member of the class in terms of success achieved.

II. PROCEDURE:

- A. All members of the class should wait in the band room until called.
- B. Each pupil, when called, will go to the warm-up room; he will be allowed ten minutes to adjust to the instrument and warm it up.
- C. The pupil will be conducted to the judging room. The person in charge of the judging room will then tell the pupil when to play each of the following exercises:
 - 1. Exercise two, lesson three.
 - 2. Exercise three, lesson three.
 - 3. Exercise four, lesson three.
 - 4. Play from G, second line, down as low as you can play.
 - 5. Play exercise six, lesson three, at different tempos, as directed.
 - 6. Exercise eight, lesson three.

7. Exercise eight, lesson four.
 8. Exercise nine, lesson four.
 9. Exercise ten, lesson four.
- D. The pupil will now be directed to an adjoining room where several pictures will be taken.
- E. The pupil will then return the instrument and mouthpiece to the band room.

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