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THE PROBLEM OF FORMAL GRAMMAR IN ELEMENTARY EDUCATION.

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On every hand there is evidence of a widely growing distrust of the effectiveness of the present educational systems in this country. More and more the magazines, newspapers, citizens' clubs, research bureaus and other organs of public opinion are concerned with the question, Is education hitting the mark? The answer to this pertinent inquiry of the layman the educator himself cannot give, because he, too, does not know. He can utter platitudes and opinions, but these do not satisfy him and much less the present age. What he desires above all things at the present time is ability, methods, and opportunity for *measuring results*. Such evaluation of the various phases of modern school procedure in the light of some intelligible and satisfactory aim (social efficiency, or Dewey's "essentials of character:" social insight, social responsiveness, and social power) is a primary purpose of a rapidly growing number of men and women devoted to the progress of democracy and education.

The problem of this study is the verification of an investigation by Franklyn S. Hoyt of the functioning of formal grammar in the lives of elementary school children. Mr. Hoyt¹

¹See the *Teachers College Record* for November, 1906, "The Place of Grammar in the Elementary School Curriculum."

chose this subject for scientific testing because its place and value in the elementary school curriculum has long been disputed. He did not attempt to decide the question by references to authorities on the science of grammar nor by quotations from noted men as to how much they believed themselves to have been helped by the study of grammar as a separate subject in their youth. He attempted to measure results directly in the children of the public schools, and it is this which makes his study of permanent importance. The need of verification of such investigations requires no discussion here. Huxley long ago expressed the modern point of view in his statement that "the man of science has learned to believe in justification, not by faith, but by verification."

Mr. Hoyt subjected to criticism and to test the five leading arguments for teaching grammar as a separate subject in the elementary schools, namely, that the subject as taught:

- a. Disciplines the mind;
- b. Prepares the way for the study of other languages;
- c. Gives command of an indispensable terminology;
- d. Enables one to use better English;
- e. Aids in the interpretation of literature.

He dismisses the formal discipline argument because, first, modern research shows that while the spread of training is not entirely mythical, still it is not sufficient to hold a subject in a modern curriculum; second, that grammar as ordinarily taught in the elementary school is abstract, relatively meaningless and beyond the needs and reasoning abilities of children; and, third, that it tends to retard rather than promote the natural development of the child, taking up his time and standing in the way of his progress toward a fair use of English in the few years of his school life; granted, of course, that with exceptional teachers or with exceptional children it may be made "to subserve a vital part in the educational process."

While the "Dogma of Formal Discipline" is, practically, still potent in common thought, and has only been "scotched, not killed," by the experimental psychologist, all will probably agree that it alone does not afford sufficient support to a course in the elementary school.

Abandoning, then, this theoretical argument as unsafe for justifying the subject, the author disposes of the second hypothesis commonly given, namely, that it prepares for the study of other languages, by showing, first, that in the best of cities most children do not enter high schools where other languages are taught, and that the places where they are taught below the high school are very few; second, that English is essentially "a grammarless tongue" so unlike the highly inflected Greek, Latin, German and French languages that its grammar can give little help; and third, that pupils who do enter the high school carry with them, even after two or three years' study of grammar, only a hazy, incomplete knowledge of the subject, insufficient to be of much help for any language.

Here, again, Mr. Hoyt's arguments seem to be sound and based upon well-known facts. The many studies of attendance, retardation, elimination, and the like, which have been made since 1906 seem to bear out his conclusions. We can, at least, tentatively grant so much.

Having disposed of the preparation-for-high-school-work basis for justification, the author likewise refuses to accept the sufficiency of the argument that formal grammar is necessary in the elementary school because it equips the pupil with certain indispensable grammatical terms. He asserts that the indispensable part of the terminology of grammar is limited to a very few terms, much better acquired by actual use in a functional way.

What the author here means may, perhaps, be illustrated by the language work in the Francis Parker School, Chicago, which the writer visited for several days in 1907. No period for grammar was shown on the program for the eighth grade. The teacher of this grade was asked if she taught the pupils grammar, and she replied, "Only as I find it helpful in writing or speaking English. If the pupil misuses adverbs, for example, I may call attention to this type of mistake and use the term, adverb. The pupil generally desires to know at this point what an adverb is, and I tell him." How few of such terms pupils really need should in some such manner be determined. It is not entirely a question of whether grammar when looked at alone may not be of some little value, but a question

of what knowledge is of most worth to the actual boys and girls in the actual public schools and with their actual careers in the actual world today immediately before them.

Whether the arguments thus passed over should also be subjected to experimental proof need not detain us. It is the strength of the two remaining props which concerns us here. Does the study of formal grammar in the elementary school help children very much (d) in the use of correct English and (e) in the interpretation of the language? These are the problems of the Indianapolis investigation and the Minneapolis verification.

THE INVESTIGATION.

The reasoning of the Hoyt inquiry is substantially as follows: If the study of formal grammar helps pupils to *use* correct English, for example, then, in general, pupils having a good knowledge of grammar should be found to excel in the correct use of the language, and *vice versa*. That is, with careful tests and large numbers of children there should be found some significant degree of correlation between the two sets of ratings. This is all the more certain when we remember that strong students are frequently strong in several subjects and weak pupils are frequently poor in several subjects. How large the latter correlation is in general we do not at present know. Perhaps much of the small correlation found by both investigations can be accounted for on this basis. At any rate, the method of thinking is the same as that involved in finding the relationships between any two large groups of phenomena. If we wish to know, for instance, if there is any relationship, probably causal, between children's absence from school (through sickness or other causes) and their failure of promotion, we can determine it by seeing how generally *absence* is correlated with *failure* and whether the number of cases of the latter increases with the former. If, in general, *all* children who miss school over five weeks in a term fail of promotion, we should have a correlation of 100 per cent., or 1. A correlation of 50 per cent., or .5, would show a fair connection between the two phenomena, while one as low as 10 per cent., or .1, would be relatively insignificant in this case. In each

case it is necessary to take large numbers of children in various schools in order to eliminate as far as possible other causal factors.

Mr. Hoyt carefully prepared three examinations, one in grammar, one in composition, and one in interpretation, which were given to two hundred Indianapolis high school pupils who had but a few months before completed the work of the elementary schools.² The papers were carefully graded by two expert markers and correlations made according to the Pearson formula, with the following results:

	A's marks.	B's marks.	A's and B's com- bined.	Average of A's and B's corre- lation.	Probable true corre- lation.
Grammar and composition.....	.12	.23	.23	.18	.30
Grammar and interpretation.....	.22	.19	.28	.21	.35
Interpretation and composition....	.27	.30	.32	.28	.41

These rather generously estimated "probable true correlations" the author asserts are "not sufficiently great to lead us to believe that knowledge of, or proficiency in, one of them depends upon, or is materially influenced by, a similar attainment in either of the other abilities," thus vindicating to some extent, also, the stand made with reference to the disciplinary value of grammar.

More light is thrown upon these low correlations when we compare them with correlations made between the ratings for different subjects in college entrance examinations and elsewhere, as given in Thorndike's "Educational Psychology" (1902 edition) and Mr. Hoyt's thesis. Higher correlations are found between totally different subjects than between grammar and these two abilities. A student with a given grade in grammar is more likely to have a similar grade in history, for example, than he is to have a similar grade in composition or interpretation. Where possible, future tests of these relationships may well take in correlations between grammar and the students' actual ratings on examination in other subjects. These were not undertaken in this investigation nor in the verification.

²For directions and examinations see appendix of this article.

THE VERIFICATION.

It has been necessary to give much space to the original Hoyt investigation in order to show what has been tested. The careful investigator today publishes not only the results of his inquiry, but gives also the methods he has used and his original data so far as possible. The later student of the problem may recompute the original investigation from the data or he may follow the same method to see if the same results are obtained. The writer has verified the computations, but he could not easily obtain the original examination papers, and the latter precaution is probably not necessary. No other conclusions seem to be derivable from the figures given, although the data may be used, of course, for various purposes. The method of verification was to follow carefully the exact method used by Mr. Hoyt, taking only a different group of children. The pupils he tested were beginning high school pupils in Indianapolis; those tested for the verification were beginning high school pupils of Minneapolis.³

It was not thought necessary to have the papers marked by two persons, working independently, in the case of the verification. Independent marks were made of twenty papers in each subject, and these corresponded so closely to the marks already given by the investigator that the second marking was abandoned. The expense and labor seemed too great for the extra accuracy. No marks were put on the papers; they were kept on separate sheets for each subject and all the papers for a single subject were graded at a time. The names were unfamiliar to the writer and no attention was paid to the general correspondence of the marks for any pupil in the various subjects.

³The second tests were given in the East and Central high schools of Minneapolis through the kindness of Principals W. F. Webster and John Greer, respectively, on the same day, in the month of February, 1907. The pupils were from 40 different elementary schools and showed good, average knowledge of the subjects in which they were tested. They had entered the high schools in the middle of the school year, about January 20.

The results, as given below, are a surprising proof of the accuracy of Mr. Hoyt's correlations:

Correlation of grammar and composition23.	Probable true C. not over	.3
Correlation of grammar and interpretation10.	Probable true C. not over	.2
Correlation of composition and interpretation . .	.24.	Probable true C. not over	.3

They show that there is very little connection between the results by subjects of these examinations of these pupils, with the probability that there is little connection between *all* that is gained from any two of these subjects as now taught and for children in general of the same grade. Other tests and other methods should be used to carry the matter to relative finality.

For those who wish further to verify the conclusions there are given in the appendix, also, the marks which the pupils received in each subject. They are given as deviations from the stated medians in order to save labor for any who wish to use them. The actual marks can easily be obtained by adding the deviation to the median for the subject.

CONCLUSIONS.

These two tests and the careful consideration of the other values thought to exist in the teaching of formal grammar to elementary pupils seem to take away much of the support the subject now has. A fact remarkable to the writer has been the readiness with which schoolmen generally endorse the conclusion that formal grammar is of little value to elementary pupils, while the subject nevertheless remains relatively unchanged, often beginning in the fourth or fifth grades of the elementary curriculum. With the great demand made on the elementary school in our present-day, changing, industrial democracy, it is no longer admissible for a subject to remain in the curriculum for no other reason than tradition and inertia. With the whole range of vocational, hygienic, and socializing training needed by our "nation of sixth graders," and with the curriculum now overcrowded, we need an immediate further evaluation of this subject and a speedy adjustment to the conclusion.

We need to relieve ourselves of the stigma put upon us by Professor Beard (true also for the university in which he works, of course) that American educators have great courage

in adding new subjects to the curriculum, but very little in modifying or eliminating the old ones. We cannot depend upon reports of committees of five or fifty to settle such matters. The only sure avenue will be through the laborious testing of results.

Some relatively gratuitous suggestions might be :

- a. Postpone formal grammar instruction until, at least, the eighth year, devoting the time now given to it in lower grades to careful use of English in *all* work and in special language lessons.
- b. Use only such grammatical terms and study of the science of grammar as seem, or are proved, to be actually necessary. Select carefully these terms and principles and standardize them. All the pupils in a school system or in the country may well use the same names for the same things in this field. (Steps are being taken in this direction.) With such use and selection all the principles may be given in an organized review covering probably not more than the last half of the eighth year. Many children will, of course, never reach this grade, but they *may* be able to write their letters and speak with fair correctness when they go out into the larger life, and this is essential.
- c. The functional use of language in as nearly as possible real life situations, drills in correct speech, and "never-failing watch and care" over the ordinary language of the classroom and playground should take the place of most of the large amount of time¹ now given to this subject in our elementary schools. There are many subjects which to the adult appear finely adapted and quite necessary for the children's education. Of the many proposed we must select only those which actually are of the greatest value and which the child can assimilate and use in the short average time of his school days.

¹See Payne's "Public Elementary School Curricula."

- d. School text-books in language, so necessary for most American teachers, should be selected with the greatest care. Many now attempt the functional method of teaching grammar and correlate it closely with language work. In order to get a wide sale for the books, however, all the grammar that any schoolman might demand is crowded in, so careful selection and elimination is necessary even in the best texts. For the experienced and able teacher the life situations of her class will prove more useful as guidance material for language work than any text, valuable as the latter sometimes is.

APPENDIX I.

Directions for Giving Tests.

"The object in giving these tests is to determine what relation a knowledge of grammar bears to the ability to use good English and to interpret language.

"First, give a test in composition, allowing the pupils to write for forty minutes on this subject (which should be written on the board without development): 'How would you spend a thousand dollars if that sum should be given you to spend during the Christmas holidays? Why would you spend the money as you propose rather than in any other way?' Pupils should write the name, address, name of school, etc., at the head of the composition, as asked for in the test in grammar.

The tests in grammar and in power of interpretation should follow as soon after the test in composition as convenient. These two tests should be given on successive days, in the order given: *i. e.*, the test in interpretation following the test in grammar.

Arrange the papers for each test in order of merit, the best on top.

Test in Grammar.

State these facts at the top of the first sheet of paper:

1. Date of test.
2. Your name.
3. Your address.

4. Name of your school.
5. Your age (at last birthday).
6. Date of birthday.
7. Grammar school last attended
8. How many years did you attend there?
9. Have you ever studied the poem quoted below, Gray's "Elegy Written in a Country Churchyard?" If so, to what extent?

(Answer as many of the following questions as you can in 40 minutes. The questions are all based on the following stanzas from Gray's "Elegy Written in a Country Churchyard:")

1. The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea,
The plowman homeward plods his weary way,
And leaves the world to darkness and to me.
2. Now fades the glimmering landscape on the sight,
And all the air a solemn stillness holds,
Save where the beetle wheels his droning flight,
And drowsy tinklings lull the distant folds;
3. Save that, from yonder ivy-mantled tower,
The moping owl does to the moon complain
Of such as, wandering near her secret bower,
Molest her ancient solitary reign.
4. Beneath those rugged elms, that yew tree's shade,
Where heaves the turf in many a mouldering heap,
Each in his narrow cell forever laid,
The rude forefathers of the hamlet sleep.

1. Select and write out in full (a) a compound sentence; (b) a complex sentence.
2. Diagram or analyze the last two lines in the first stanza.
3. Select (a) two phrases and (b) two clauses. Tell what each modifies.
4. Give the part of speech of the first word of each stanza, and tell why you so classify it.
5. What is the case of each of the nouns in the last stanza? What determines the case in each instance?
6. Give the voice, mode, tense and number of the verbs in stanza 3; also tell whether they are transitive or intransitive, and why.
7. Name the adjectives in stanza 3, and tell what the use of each is in the sentence.
8. Give the simple subject, the simple predicate, the complete subject and the complete predicate of the sentence in stanza 4.
9. What part of speech is each of the following words? Give your reason for so classifying it:

First stanza: *o'er, homeward.*

Fourth stanza: *those, many.*

10. Select four verb-forms that are not used as simple predicates. As what part of speech is each used?

Test in Interpretation.

Time, 50 minutes.

1. Express in prose the thought of the stanzas given below. Use the language of the poem as far as possible, making, however, such changes as may be necessary to render the thought in clear, straightforward prose. Unusual words may be looked up in the dictionary. These stanzas are taken from Gray's "Elegy Written in a Country Churchyard." It will be recalled that the part of the poem preceding these stanzas contains a description of the churchyard and of the character of the "rude forefathers of the hamlet" buried there. In the stanzas given the poet continues to refer to these buried forefathers:

Perhaps, in this neglected spot is laid
 Some heart once pregnant with celestial fire;
 Hands that the rod of empire might have swayed,
 Or waked to ecstasy the living lyre.

But Knowledge to their eyes her ample page,
 Rich with the spoils of time, did ne'er unroll;
 Chill Penury repressed their noble rage,
 And froze the genial current of the soul.

Th' applause of list'ning senates to command,
 The threats of pain and ruin to despise,
 To scatter plenty o'er a smiling land,
 And read their history in a nation's eyes,

Their lot forbade; nor circumscribed alone
 Their growing virtues, but their crimes confined;
 Forbade to wade through slaughter to a throne,
 And shut the gates of mercy on mankind.

2. Give the thought of these four stanzas briefly in your own words.

APPENDIX II.

Individual Records Given as Deviations from Type.

In the following table is given the individual marks of the pupils expressed, for convenience in verification,⁵ as deviations from the medians 77, 23 and 19, respectively. In order to avoid fractions all records in composition and interpretation were doubled, the actual medians for composition and interpretation having been 11.5 and 9.5. The marking was done in the same way as in the Indianapolis tests. "Each answer in the grammar test was marked on a scale of ten. The sum of these marks gave the 'quantity mark' for the paper. The mode or the average⁶ was taken as the 'quality mark.' The total

⁵Original marks can easily be obtained from these if desired, as above noted.

⁶The average was taken when it was near the mode, or was typical; otherwise the mode was used.

mark for the paper was obtained by the use of the following formula: (Quality mark \times 5) + Quantity mark." This accounts for the marks above one hundred in grammar.

"The composition and interpretation papers were marked on the scale of twenty, an average paper receiving the mark of ten."

Individual.	Grammar.	Composition.	Interpretation.	Individual.	Grammar.	Composition.	Interpretation.
1	26	9	1	51	-35	-9	-7
2	30	13	-1	2	25	5	1
3	-12	-3	-18	3	-9	-4	-1
4	9	3	-11	4	-22	-1	4
5	26	-1	-1	5	-4	3	4
6	3	1	15	6	-7	-5	-1
7	4	13	17	7	29	-9	5
8	13	1	1	8	13	3	1
9	43	3	1	9	0	-1	9
10	-17	1	3	60	6	3	3
11	15	3	-1	1	-6	-6	1
12	25	5	-3	2	32	9	1
13	-4	-5	-1	3	-37	3	-5
14	32	-3	-9	4	-6	-1	-17
15	31	5	1	5	-25	-3	-7
16	1	-3	-1	6	-4	-3	-15
17	-7	5	-5	7	12	-11	-9
18	-1	-1	-15	8	5	-19	1
19	15	1	-3	9	7	-3	1
20	20	3	5	70	-4	5	3
1	-13	-7	-3	1	-16	-7	1
2	8	1	-9	2	-1	1	-3
3	-19	-18	5	3	22	-9	-5
4	-30	1	-7	4	-15	7	-1
5	18	3	-3	5	-9	-1	-3
6	0	-6	-1	6	-9	-3	2
7	-22	-1	1	7	7	15	-1
8	-14	1	-5	8	-12	5	1
9	11	3	-15	9	6	-11	-3
30	37	1	5	80	-24	-3	-3
1	37	-1	7	1	9	-13	-9
2	-3	3	5	2	9	1	-15
3	11	3	-11	3	2	7	1
4	9	2	-8	4	-5	-17	1
5	-32	-5	3	5	2	3	1
6	-6	15	1	6	2	-1	1
7	2	5	15	7	-7	-4	-3
8	23	1	1	8	10	3	-1
9	-52	11	1	9	31	1	3
40	-14	9	-11	90	-7	-11	-7
1	-10	11	3	1	20	1	9
2	15	-7	1	2	22	-4	-5
3	15	1	-7	3	24	5	-1
4	-9	-7	1	4	42	5	1
5	-6	1	-5	5	3	3	1
6	-13	3	3	6	-37	1	-1
7	30	-3	-7	7	11	3	5
8	-9	-1	-1	8	-16	5	9
9	-32	-7	-7	9	-8	3	11
50	-31	-5	-9	100	-13	3	5

Individual.	Gram-mar.	Compo-sition.	Interpre-tation.	Individual.	Gram-mar.	Compo-sition.	Interpre-tation.
101	37	7	- 3	151	- 2	5	-11
2	-16	-17	- 7	2	-12	3	1
3	-22	3	- 1	3	-12	5	17
4	2	3	- 7	4	- 6	1	- 3
5	- 5	- 3	- 9	5	13	3	1
6	-15	- 5	-17	6	11	13	19
7	-12	1	13	7	1	3	9
8	1	3	- 5	8	1	- 3	11
9	0	3	- 3	9	3	- 3	- 1
110	1	- 3	3	160	13	3	- 9
11	13	3	11	1	13	- 1	- 5
12	13	5	-13	2	- 3	1	5
13	22	- 5	- 3	3	13	1	- 3
14	-15	3	13	4	2	- 7	9
15	-25	- 1	-17	5	-11	- 1	- 7
16	- 7	-11	-15	6	12	3	1
17	25	- 3	-13	7	- 9	- 3	3
18	53	5	-11	8	21	- 7	1
19	- 5	- 7	7	9	-12	-13	- 9
120	22	1	4	170	- 4	- 1	1
1	29	- 5	- 3	1	- 7	3	-11
2	17	3	- 9	2	3	- 3	17
3	2	- 3	- 1	3	- 4	3	15
4	71	13	21	4	- 7	3	7
5	34	5	1	5	-12	5	- 3
6	13	1	- 9	6	-13	-15	1
7	15	- 1	-13	7	- 7	1	3
8	-15	3	- 7	8	4	- 1	1
9	- 6	5	- 5	9	31	- 3	- 3
130	13	- 7	-17	180	1	- 3	- 7
1	- 8	- 3	-15	1	0	- 9	- 7
2	- 1	1	17	2	15	- 1	- 9
3	- 1	- 7	-15	3	- 5	1	7
4	6	- 1	- 9	4	3	- 5	1
5	20	- 3	1	5	12	- 5	5
6	11	1	- 7	6	2	1	- 1
7	11	3	7	7	2	1	1
8	5	5	1	8	- 6	-11	9
9	13	- 1	- 7	9	3	-15	1
140	1	5	- 3	190	12	- 1	13
1	- 4	3	- 5	1	- 8	- 3	1
2	- 8	1	- 9	2	6	- 1	- 3
3	29	- 9	- 7	3	-11	-13	3
4	5	- 3	3	4	-20	7	- 3
5	3	1	- 7	5	-11	- 3	- 5
6	- 4	- 1	- 9	6	3	- 5	- 7
7	-25	-17	- 9	7	-14	1	17
8	9	3	5	8	- 7	- 1	1
9	- 8	5	- 7	9	21	1	11
150	12	- 1	- 5	200	5	5	5