BOSTON UNIVERSITY
SCHOOL OF EDUCATION

Thesis
A CRITICAL STUDY OF ECONOMY
OF TIME
IN THE SECONDARY CLASSROOM

Submitted by
William M. Carey, Jr.
(A.B., Boston College, 1931)

In partial fulfillment of requirements
for the degree of
Master of Education
1932

First Reader: Edward J. Eaton, Professor of Education
Second Reader: Jesse B. Davis, Professor of Education
A CRITICAL STUDY OF ECONOMY OF TIME IN THE SECONDARY CLASSROOM.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Purpose of Thesis</td>
<td>1</td>
</tr>
<tr>
<td>II. Importance of Economy of Time</td>
<td>3</td>
</tr>
<tr>
<td>III. Procedure of Investigation</td>
<td>5</td>
</tr>
<tr>
<td>1. Causes of Waste</td>
<td>11</td>
</tr>
<tr>
<td>2. The characteristics of the classroom should be such that they are conducive to effective work.</td>
<td>12</td>
</tr>
<tr>
<td>3. The position and arrangement of supplies should be such that they can be obtained without waste of time.</td>
<td>15</td>
</tr>
<tr>
<td>4. Economy of time in the use of the blackboard.</td>
<td>19</td>
</tr>
<tr>
<td>5. The pupils should not be required to do unnecessary work.</td>
<td>23</td>
</tr>
<tr>
<td>a. Unnecessary dictation exercises.</td>
<td>23</td>
</tr>
<tr>
<td>b. Unnecessary copying of questions.</td>
<td>26</td>
</tr>
<tr>
<td>c. Other superfluous work.</td>
<td>28</td>
</tr>
<tr>
<td>6. Economy in the Taking of Notes</td>
<td>30</td>
</tr>
<tr>
<td>7. The teacher should begin the work of the class on time</td>
<td>31</td>
</tr>
<tr>
<td>8. Economy in the use of drill</td>
<td>33</td>
</tr>
<tr>
<td>9. Economy in the use of illustrations and demonstrations</td>
<td>35</td>
</tr>
<tr>
<td>10. Economy in asking questions</td>
<td>43</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>PAGE</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>V. Summary and Conclusions</td>
<td>51</td>
</tr>
<tr>
<td>VI. Reliability of Information</td>
<td>55</td>
</tr>
<tr>
<td>VII. Appendix</td>
<td>57</td>
</tr>
<tr>
<td>VIII. Bibliography</td>
<td>59</td>
</tr>
</tbody>
</table>
I. PURPOSE OF THESIS

The purpose of this thesis is to present in a negative way a critical study of the principles which underlie instruction in high school subjects. I say in a negative way because a presentation of the wasteful practices employed in the classroom will automatically present those practices which are economically sound and to some extent efficient. It is the purpose of the writer to notice those practices which seem wasteful or uneconomical, and which can be eliminated in the management of a high-school class. Hence, this work is primarily concerned with the work of classroom teachers and not with the curriculum or organization of the present day high school.

The school is essentially a complicated, specialized institution maintained by society to achieve certain specific results. These results are the full and harmonious development of all the child's faculties. The classroom activities should be planned carefully to make sure that they are directed toward securing those results most economically and at the same time most effectively. The possibilities of misdirected time, effort and energy should be reduced to a minimum. A consideration of the reduction of these efforts and energies to a minimum is the chief con-
cern of this thesis. However the thesis does not offer any particular way of reducing these misdirected energies. It is concerned with a consideration of wasteful and uneconomical practices, and so by this consideration to bring those wasteful practices to the attention of the reader. It is not the hope of the writer to improve the classroom management of any teacher, nor to criticize the classroom practices of any teacher. Thus, while there are many deplorable practices cited herein, they are not cited from the viewpoint of destructiveness but rather constructiveness.

By economy of time the writer means that aspect of class management which has for its purpose the saving of time and energy for both teacher and pupils. Class management from this point of view is important as the means without which effective classroom work cannot be done.
II. IMPORTANCE OF ECONOMY OF TIME IN THE CLASSROOM

In any other institution, or organization, or plant as complicated as the school, efficiency and economy depend to a large extent upon careful attention to the details of management. In a manufacturing plant, for example, a great deal of care and diligence is taken to provide for the most economic placing and handling of materials, so as to eliminate waste motion. A manufacturer may increase the efficiency of his plant by inventing a device that will require fewer operations to produce an article, or will produce several articles by the same number of operations which formerly produced but one. If such principles of economy are important in factories where the product wasted or saved is merely material, then, they are much more important in the school where the product wasted or saved consists of human factors. No industry deals with such precious raw material as does the school. Therefore, in no other process is it so important to give careful attention to the problems of waste and economy as in the classroom.

No teacher should be content with merely an average or a satisfactory class. He or she should strive to have each member of the class working under conditions of maximal ef-
ficiency. The teacher should constantly bear in mind the fact that no class is doing its best unless all of its members are engaged during the recitation in actively performing work that is actually worthwhile.

The writer is aware that such ideal conditions can never be realized. However, such ideals can be approximated. Strange to say, few teachers seem to keep in mind the problem of eliminating waste. They are content to use uneconomical methods and to achieve only mediocre results. It should be the purpose of every teacher to approach the ideals of economy and efficiency to the best of his ability.
III. PROCEDURE OF THE INVESTIGATION

In general the method used in the collection of material for this thesis was that of classroom visitation. This was supplemented by the work of writers and authorities in the field of education. The writers and their works are listed in the bibliographical list contained at the end of this thesis.

In the classroom visitation no attempt was made to check the number of times a wasteful procedure was carried on. The procedure itself was merely noted by the writer and is incorporated in the body of this thesis. No special group of teachers was selected according to their ability or their experience. The writer, after having obtained permission to visit the various secondary schools, made his appearance to them unannounced. The teacher was told that the visit was part of a study of teaching and the visitor was not an inspector. The statement made to each of the teachers was to the effect that my problem was to discover how teachers actually taught. Reference was made to the fact that many other teachers had been visited or were to be visited, and that the observers fully appreciated the difficulty of teaching for visitors. To this last statement was added another concerning the observers own embar-
rassment as a student-teacher. The teacher was told that the visitor (the writer) would, of course, take some notes, but that this should not confuse her. She was not told, however, that perhaps these notes would be used in the preparation of any study. The teacher was told that she might see them. (Only four teachers out of thirty-eight asked to see the notes.) It was usually stated that the observer wished merely to watch the procedure carried on in the classroom, and that he was anxious to observe actual teaching. It was also stated that the observer preferred not to see model teaching but wished to see just the regular daily class work. The teacher was told that the visitor was not at all concerned with how well or how poorly she did her work, but merely wanted to observe her usual procedure. Many of the teachers seemed to be set at ease by these explanations.

The records were taken in the following order and in the following manner:

I. General Observations. These were taken by the writer and included two types of materials:

1. a record of various kinds of written work that appeared on the blackboards, lists of materials and equipment that were in evidence about the room, copies of mimeographed materials, outlines, study directions, assignments, etc.
2. detailed records of observable teacher and pupil activities. These were more along the type of a diary. They included not what the observer thought about the work of the teacher, but rather a strict account of what was actually done. Further reference to this will be noted under the Attention Chart (point no. II below). The primary purpose of the observer was to get as exact a record as possible of the actual performance of the teacher.

II. The Attention Chart, or Time Chart. In this respect, the procedure followed was that used by 1 Morrison. This chart was a single sheet and was constructed around the activities of the teacher. Apropos of this, a number of supplementary records were taken, including such items as the number of hands raised, the number of questions asked by the pupils, the number of responses in which the class as a group replied and the like. These were not intended to be used in this work, but they often proved valuable for reference.

---

TIME WASTED

Outside room conversing with another teacher. 6 min.

Arranges desk to begin day's lesson. 2 $\frac{1}{2}$ min.

Rambling comments. 2 $\frac{1}{2}$ min.

Looks for chalk to write on board. $\frac{1}{2}$ min.

Sits at desk while pupils work on next day's lesson. 6 min.

Total Time Wasted: 17 min.

NOTE: each horizontal line represents two minutes.

TIME VALUABLY USED

Gives next day's assignment, takes attendance, etc. 12 min.

Asks questions on assignment. 8 min.

Carries on work with pupils, etc. 7 $\frac{1}{2}$ min.

Explains map drawn on board. 5 $\frac{1}{2}$ min.

Total time Valuably Used: 33 min.

A COPY OF THE MORRISON TIME CHART AS WAS USED IN DETERMINING THE TIME WASTED IN CLASSROOM PRACTICES.
III. The third item was the necessity of some standard. But what standard could the writer use? How was he to know whether a practice used by the teacher was wasteful or otherwise? In answer to this, a careful survey was made of all possible texts in the field of secondary education in an attempt to find some standard whereby an inexperienced observer could obtain some standard or criterion to employ. This criterion or standard was found in a text written by S. S. Colvin, and has proved of great value in the observation work of the writer. It is included in the appendix of this thesis.

The list of things noted in the observation work of the writer include the following: characteristic actions of the teacher, the teacher's questions, the use of illustrative materials, attention to physical conditions of the classroom, characteristic pupil activities, and such quantitative facts as are concerned with the question of economy of time. Among these latter should be mentioned the length of the pupil's response, the length of the teacher's question, the amount of time consumed by individual pupils during the recitation period, time spent with various illustrative

---

devices, time lost in wait and delay, the amount to time given to assignment, review, tests, quizzes, special reports by pupils, roll call, announcements, distribution and collection of materials, note-book work, and map work. These practices were not viewed in a qualitative respect, but rather in the light which they threw on the question of economy of time in the classroom.
IV. A CONSIDERATION OF ECONOMY OF TIME IN THE SECONDARY CLASSROOM.

I. CAUSES OF WASTE:

There is no single cause for the waste of time which occurs in the classroom. Many factors usually contribute to bring about the undesirable results. However, the various kinds of loss may be traced to a few main sources. These sources of waste and uneconomy of time in the classroom have been divided by Doctor Bagley into two principal types: The first type includes those where the waste is due to failure to organize properly certain mechanical aspects of the classroom activity. To this type he applies the term "routine factors". The second type includes those sources of waste which are due to failure to adjust the classroom activities to the varying capacities, interests, and responses of the pupils. To these aspects of school work Bagley applies the term "judgment factors". The judgment factors are constantly varying and require of the teacher alert exercises of judgment in order to avoid misdirected time and energy. The routine factors, on the other hand, include those matters that appear in about the same form from day to day and which can be

1 Bagley, W. C., Classroom Management, Macmillan, 1907.
advantageously systematized, organized, and reduced to mechanical habits. It is these latter factors - the routine factors - with which this thesis is concerned. They are the factors under which the wasteful and uneconomical practices of some teachers fall.

The wasteful elements which the writer intends to discuss are the following:
1. The characteristics of the classroom.
2. The position and arrangement of supplies.
3. The use of the blackboard.
4. Unnecessary dictation exercises.
5. Unnecessary copying of questions.
6. Taking of notes.
7. Beginning the class on time.
8. The use of drill.
10. The asking of questions.

2. CHARACTERISTICS OF THE CLASSROOM

"Successful study is difficult in a room which is not warm, well lighted, well ventilated, and otherwise physically comfortable. Thus the first step to be taken is to provide a physical environment which will not interfere with effective work."

---

1 Munroe, W. S., Directing Learning in the High School, p. 422.
"The temperature of the room should range from 68 to 70 degrees Fahrenheit. Air should be fresh and clean, that is, free from noxious gases, fumes, and dust. The air should be moderately moist rather than dry." 1

The classroom itself is one of the prime factors in the lack of economy of time in the classroom. Too often the room is not properly lighted, heated or ventilated. These details are not of trivial consideration. 2 The writer has noticed classrooms where the temperature was in the vicinity of fifty degrees on a January morning. So cold was it that in order to insure the comfort of the pupils the teacher was obliged to send them to the coatroom, not on the same floor as the classroom, procure their coats and sweaters, and march back again to their respective seats. This process of procuring coats and sweaters took approximately twelve minutes. Not only was this twelve minutes of classroom time lost, but also about twenty minutes more of the recitation period were lost because the pupils were unable to proceed with their work effectively in their uncomfortable circumstances of dress. While this was not the fault of the teacher it is nevertheless a factor affecting the question of economy of time.

1 Barr, A. S. An Introduction to the Scientific Study of Classroom Supervision, pp. 202-204.
2 Terman, L. S., and Almack, J. C., Hygiene of the School Child. See Chapter 20 on the "Hygiene of the Schoolroom".
It is unnecessary to point out classrooms in which conditions to the contrary are likewise true. Often rooms are so stuffy and uncomfortable that they are not conducive to either the effective work of the teacher or pupils. The writer was in a room of this type in a recent visit to a Senior High School. The room was on the south side of the building and subject to not only the heat supplied from the heating plant, but also the rays of the sun. It was not long before the room became very stuffy. The class became restless and the teacher proceeded to open one of the windows. In the attempt to open the window, which was stuck, six minutes of the class period was lost.

If a room is poorly ventilated or lighted the energy of the students becomes diminished, "producing headache, drowsiness, dizziness, and nervousness." In two recitation rooms which the writer visited there was an ample supply of fresh air from the inlet in the wall near the ceiling in one end of each room. But in each case the outlet was placed in the wall near the floor directly under the inlet. As a consequence, according to the teacher, only about one-fourth of the room was properly aired. Three-fourths of the room

---

received practically no benefit from the current ventilating system.

In another room a very effective method of taking care of the ventilation was produced by the teacher. A monitor was appointed, whose duty was to open the windows wide when the class arises to leave for the next recitation. When the next class came into the room its monitor closed the window. Thus not only was the time of the teacher saved, which time could be used for work of another nature, as the preparation of the day's lesson, for example, but also three or four minutes of thorough ventilation was provided for.

The temperature in the classroom should not be above seventy-two degrees; the air should be in circulation, and to some extent, it should be fresh air. As a rule the teacher has little to do with these conditions, but in so far as they are in anyway under his control, he should attempt to make them satisfactory. The teacher can, to a great extent, watch such things as ventilation and the temperature of the classroom.

3. POSITION AND ARRANGEMENT OF SUPPLIES, ILLUSTRATIVE MATERIALS, ETC.

"In some schools a lesson requiring the use of materials is always preceded by several minutes' waste of
time in providing the necessities. It becomes requisite, therefore, to keep these materials in a closet or drawer provided for the purpose, and to distribute them either at the beginning of the session or whenever they are needed. The system requires efficient monitorial service, but, once well established its operations need occupy but a brief period at the beginning and at the close of each daily session. Formal drills are again necessary at the beginning and at the outset to insure order, uniformity, and celerity in the required movements. At the beginning of each period the necessary materials should be secured, without noise or confusion, at a simple signal from the teacher. At the end of the period they should be replaced as quickly and quietly.\(^1\) "It is important that all materials for classroom use should be so placed as to be readily accessible to the pupils. Any attempt to operate without a carefully devised plan of routing would be a failure.\(^2\)

A large amount of waste has been eliminated in shops, factories, and merchant establishments by developing plans for furnishing the workmen with their materials in the most direct and rapid manner possible. In the same manner much waste can be eliminated and much time saved in the secondary classroom if procedures and plans are carefully noted in advance of the class period. Many teachers waste several minutes each day in such mechanical operations as the distribution of corrected themes in English or corrected examination papers in other subjects.

In a class in History the writer noticed the following wasteful procedure: an examination had been given prior to the visit of the observer. On the day which

\(^1\) Bagley, W. C., op. cit., pp. 42 and 43.

\(^2\) Colvin, S.S., op. cit., p. 131.
the observer visited the classroom the examination papers were returned to the pupils. The teacher, instead of arranging the papers according to the seating plan of the class, or giving them to a class monitor, proceeded to call out the names of the pupils in the same order as they appeared on the papers. The pupils left their seats at the mention of their names, walked up to their teacher, took their papers, and returned to their seats. The procedure was timed by the observer and took approximately thirteen minutes.

The position and placing of materials is most important in laboratory instruction and laboratory work, especially in the sciences of chemistry and physics. "The general enthusiasm for laboratory work has often blinded teachers to the fact that it commonly wastes a great deal of time in processes of routine manipulation." In connection with laboratory work, examples of waste due to failure to provide for the proper handling of materials, are often noticed in observation work.

An example occurred in a chemistry laboratory in which it was necessary to use thermometers at a certain stage of the experiment. Many of the pupils reached

---

1 Parker, S. C., Methods of Teaching in High Schools, p. 463.
this stage at about the same time, and got to wrangling in trying to provide themselves with the thermometers from the one drawer in which the thermometers were kept. It seems that much waste could have been avoided by having the thermometers distributed before the experiment was begun.

Unless careful steps are taken to avoid it, it seemed to the writer, there is probably more time wasted in laboratory than in any other type of high school exercise. If there is the least opportunity, the writer has noticed, many pupils will spend their time in "monkeying" and "fooling around" instead of attending to the work at hand. Often in the laboratories there is no arrangement or classification of the supplies and apparatus to be used. Upon a careful examination much of the materials will be found to be thrown into closets and cases in a haphazard manner, which at the time was most convenient.

In one instance, the writer found a very systematic, orderly, and therefore economical method of laboratory procedure. The apparatus for each experiment was arranged in separate boxes for the use of individual pupils, and was prepared the day before the experiment was conducted. Class foremen or monitors were assign-
ed the task of bringing out these materials when needed and placing them where the pupils would find them near at hand. General supplies were arranged on a nearby table and were in such a position that when they were needed but two or three minutes were required to obtain them. When the pupils assembled in the laboratory they found all of the necessary materials for the experiment at hand. They began at once to set up their apparatus and in five minutes they were engaged in carrying on their experiments. At the end of the period all the materials were restored to their proper places.

The procedure in laboratory management can also be applied in manual training and household arts and to work in the drawing classes. In all these subjects arrangements can be so systematized that the pupils may have the whole period to use for concentrated work instead of delay in securing materials. The writer has seen an entire manual training class wait while the instructor in charge sawed out boards on a circular saw into pieces for the pupils to use in their work.

4. ECONOMY OF TIME IN THE USE OF THE BLACKBOARD.

"It is strict economy to have each pupil assigned to a definite place at the blackboard and to insist that, whenever blackboard work is required,
he pass to this place. If this is done, uniform movements can be made to and from the board.\textsuperscript{1}

"In the work done at the blackboard, the writing must be legible, the spaces between letters and words must be uniform and sufficient in extent, and the arrangement of the written work must present a neat appearance."\textsuperscript{2}

There is probably no one device in class instruction that is used with so little consideration and so much waste as the blackboard.

The writing of some pupils is so small that it can not be read by even those in the front seats of the room. Moreover, it is so spaced that it runs into the work of others, thus causing an overlapping of words and creating much confusion. Sometimes the board is so situated and the writing so slovenly and indistinct that it can be seen only with difficulty. In most blackboard work unnecessary time is consumed not only in getting the pupils to the board, but also in assigning them to the space at which they are to work. The whole procedure is often quite haphazard. Sometimes it is quite orderly and efficient. It was observed that one teacher in order to eliminate this unnecessary consumption of time, had each pupil assigned to a definite place on the preceding day. The pupils on the next day passed directly to the board on entering the room at the beginning.

\textsuperscript{1} Bagley, W. C., \textit{op. cit.}, p. 40.
\textsuperscript{2} Ibid., p. 48.
of the class hour and started their work at once.

It was apparent that some teachers have an unexplainable way of utilizing backboards to the side of the room rather than those in the front of the room. One teacher employed this method to draw a map with the result that much time was lost not only in the confusion of the pupils turning around in their seats to see the board, but also in the pupils seizing the opportunity to have a little fun kicking those who were unprotected by the back of a chair. There was much time lost in "giggling" among the pupils and more time used up in an attempt to quiet them. Just why the teacher used the board at the side of the room to bring out her point could not be understood by the observer. The board at the front of the room was clear, the light did not strike it in such a way as to render what was being written on the board invisible to the pupils, and the map which had been drawn on the board was erased.

Another very inefficient procedure in the use of the blackboard which was observed by the writer was the following: The class was one in Latin. At the beginning of the period and almost before the pupils were seated, the teacher sent six members of the class to the blackboard to write out the conjugation of some verbs which
had been assigned the previous day. She then proceeded to question the remainder of the class on other parts of the assignment, and at the same time proceeded to forget the work which was being done at the blackboard. The class hour passed and a few minutes before the bell rang, her attention was called to the work done on the blackboard. The teacher dropped the recitation work and went to the board. Before a complete examination of the verbs could be made the bell rang and the class was dismissed. Not only was the work on the board wasted, but also the time of those pupils who went to the board, and who could have been participating in the more beneficial work of the class. "There is no value," says Colvin, "in hurried and indistinct correction. Indeed at times such corrections may be worse than useless, the result being that the class becomes uncertain and confused as to what is right and what is wrong."

One of the most efficient methods in the use of the blackboard which the writer saw was that used in a Geometry class. It was the practice of the teacher to give a short quiz on the day's assignment, followed by a discussion of the most common errors which occurred

1 Colvin, S. S., op. cit., p. 135.
in the short quiz of the previous day. These errors were made clear through a use of the blackboard. Sometimes the teacher selected a pupil from the group who worked at the board under the direction of the teacher and in accord with the suggestions of the class. When the next day's assignment came up for consideration the teacher himself went to the board, and at figures and illustrations already drawn there, pointed out and discussed with the class the essential points of the new propositions and proofs. In this way all the work was done directly before the class, the figures were clearly drawn, and no waste of time occurred in the entire procedure of the class.

5. THE PUPIL SHOULD NOT BE REQUIRED TO DO UNNECESSARY WORK.

a. UNNECESSARY DICTATION EXERCISES.

"Dictation is justified only when it is an end itself, never when it is a means. It cannot be defended when its purpose is merely to provide the pupil with materials that should be furnished to him in a more economical way. Much of the material that the pupil writes down should be given him in the form of mimeographed sheets."

"Class outlines and syllabi should be mimeographed by a skillful operator, not dictated."2

1 Colvin, S. S., op. cit., p. 138.
Often the pupils are required to do many things which consume a large amount of time and which are of little value. Foremost of these practices are unnecessary dictation exercises. Much of the material which a pupil is obliged to write down in class should be given to him in mimeographed form. Outlines covering a unit of work should be given out by the teacher. In this way but little time would be wasted. Such practices as making the pupils copy lists of assigned readings, class outlines, and instructions as to the procedure of a laboratory experiment are to be deplored from the viewpoint of economy in the classroom. They often prove tiresome to the pupil, besides consuming much of the pupil's and teacher's time. It is not uncommon for teachers to consume the time of the pupils by dictating such material instead of having it printed in some way. As a rule, every secondary school should have mechanical devices and employ such clerical help as is necessary. It would be to the advantage of the teacher to take such opportunities as would prove beneficial to her or him. From one well cut stencil hundreds of copies may be run off in a few minutes with much saved in respect to time. The mimeographing of laboratory directions, assigned readings and outlines not only saves time but also stimu-

---

1 Parker, S. C., op. cit. See chapter 3 on "Economy in Classroom Management".
lates more definite and careful organization of the courses of instruction. Furthermore, it eliminates the element of uncertainty in assignments. If the assignments for a term's work or the work of a marking period are definitely made out in this way the pupils have no occasion for misunderstanding what is expected of them. Moreover, they are able to realize and understand to what value their course is being taught. There are many illustrations of the waste that comes from dictation. The following are the most conspicuous:

In a ninth grade class in English one teacher read to the pupils incorrect expressions and sentences where a choice of two words, one of which was correct, was to be used. Such sentences as: "I am sure that you, as a scout (shall, will) soon learn to make a fire without matches," and "All of (we, us) boys were badly frightened". The pupils were required to copy these in their notebooks and subsequently correct. In a period of forty minutes, eighteen minutes were employed in dictating and copying. Such waste of time can hardly be justified. "Dictation cannot be defended when its purpose is merely to provide the pupils with materials that should be furnished in a more economical way."

1 Parker, S. C., op. cit., loc. cit.
In another class in European History the teacher spent approximately thirteen minutes of a class hour in dictating word for word to the pupils an outline for the next day's assignment. Upon close examination it was seen that the pupils had received no typewritten outlines, and they apparently had been copying down the following day's assignment each day. One can readily see how much time would be lost in the course of a term.

In still another class in chemistry a great deal of time was wasted in giving out directions for conducting an experiment in the making of a certain gas. If the teacher mimeographed the instructions this time would not have been taken out of the recitation period. Moreover, the pupils would have had something more than their own notes, which are often wrong, to rely upon.

b. UNNECESSARY COPYING OF QUESTIONS.

"Many teachers require of their pupils written work which is essentially time-consuming and profitless. In connection with written tests and similar exercises it is frequently the practice of the teacher to require the pupils to write out each question as well as the answer. When questions are definitely and clearly put, there can be no advantage in having them reduced to a written form. Such questions should be mimeographed when possible, or written out in advance on the board."  

Colvin, S. S., op. cit., p. 139.
In this matter of copying questions it seemed, in the observation work of the writer, that not many teachers violated this principle. However, there were a few teachers who made their pupils copy down the questions before answering them. In view of this, therefore, some consideration should be given to its discussion. Few seem to realize that they waste considerable time by requiring of their pupils kinds of written work, which, while not strictly dictation, are time consuming and wasteful.

Even when they are written out on the board in advance it is the practice of some teachers to require them to be written down again by the pupils.

In a Junior High School English class which the writer visited, the pupils were studying Shakespeare's *Julius Caesar*. The teacher had written on the board seven questions for each scene. The pupils had to copy each of these questions in their notebooks. The last ten minutes of the class period was spent in doing this. Since there are nineteen scenes in the play one can see the time wasted in this practice.

In a class in American History, it was customary for the teacher to give a ten minute quiz at the opening of the period. The teacher dictated the entire list
of questions and then told the class to begin. Of the ten minutes given for the quiz, approximately two minutes was wasted in giving the questions and then repeating them before the class was allowed to begin answering the questions. Thus two minutes could have been used by the pupils to their own advantage if the questions were written on the board before the class began.

While there were teachers who made their pupils copy down questions, there were others who better employed their time. Some wrote the questions on the board in advance of the class and the class in turn merely copied down the number of the question and wrote the answer alongside of it.

c. SUPERFLUOUS REQUIREMENTS IN OTHER WRITTEN WORK.

"The pupil should be exempt from all forms of profitless written work. Everything that is superfluous should be omitted."  

Besides the unnecessary copying of questions, and useless dictation exercises, there were found other forms of time consuming written work. The most frequent appearing of these forms was the practices used in Junior High school arithmetic classes. The pupils were re-

1 Colvin, op. cit., p. 140.
quired to write down a long series of figures, draw a line under them and then add up the columns. There is no advantage to the pupil in writing down a long column of figures for the only purpose of writing down an answer. In English grammar classes similar practices were also noted. It seemed a clear waste of time, for example, to require the pupil to write down a whole sentence when only one word was required for an answer. In these exercises single words or groups of words were omitted, and the tests consist in merely supplying the correct word. Since the exercise consists in giving the correct word, it does not seem necessary to copy down the whole sentence.

One teacher, in contrast to this practice, in a History class had mimeographed copies given out in which historical facts such as dates, names of important personages, and the location of cities were omitted. The blank spaces were to be filled in by the pupils, not on the mimeographed copy, but on a separate piece of paper. The mimeographed copy was returned to the teacher for future use. Such a test has two noticeable advantages. In the first place, it economizes the time of the pupil, and secondly, it saves time for the teacher in examination and correction.
6. NOTE TAKING.

"There is little doubt that the keeping of voluminous, carefully written notes is a waste of the student's time. On the other hand, it is evident that a brief, concise record of the student's thoughts or reactions is desirable. The problem is to avoid the former and secure the latter. The desired end may be attained by some device which necessitates subdivisions or paragraphs that make the items in the report stand out clearly, and requires the use of concise forms of expression by the student."

One of the most time-consuming elements involved in the classroom procedure is that of note-taking. While note-taking has several distinct advantages to the pupil, it might also prove wasteful. The writer has visited classrooms where notes were taken down word for word by the pupils. Such verbatim note-taking is extremely wasteful, especially when the notes are taken down in the form of dictation. In many of the classrooms the teacher seemed fully conscious of this wasteful practice and yet took no steps toward correcting it. It is important that the teacher accustom the pupil to the practice of giving careful attention to class discussions, and to the words of the teacher, and to make only brief notes of the important facts brought out during the class period. In one school, the writer was informed that re-arranging and

1 Parker, S. C., op. cit., p. 39.
organizing notes was part of the regular work in English Composition. Hence, the exercise was correlated, so to speak, with the English class and demanding not only attention in the class by the pupils, but it further furnished an ideal training in English expression.

A very good example of the wasteful practice of too much note taking was furnished in one class which the writer visited. The class was obliged to take down almost verbatim the words of the teacher for about one-half the class period. After the exercise was completed the teacher thought it a good idea to question the pupils on the information just given. The result was that her questions could not be answered. This was, due, in the opinion of the writer, to the fact that the pupils were kept busy for the entire time in the exercise of mere writing, and they consequently had no opportunity to give attentive consideration to what the teacher was saying, or to notice the importance of the matters discussed. Thus the value of the entire lesson was lost.

7. BEGINNING CLASSES ON TIME.

"The teacher should form the habit of beginning the recitation on time. Promptness is an important factor in efficiency and the prompt teacher will be a wholesome stimulus to his pupils."

One very wasteful practice employed by many teachers is the failure to begin the class immediately. Sometimes they are delayed because of unforeseen circumstances. Other times the delay is due to their own negligence. Work to be effective and economical should start off with a vigorous attack by both pupils and teacher. It is important to have the impressions of the first few minutes be those that are to persist and give the keynote of the rest of the class hour.

As an example of waste of time due to failure to start the class on time, the writer cites the case of a teacher whose custom it was to stand outside the classroom during the interval between classes. The pupils had filed into the room and placed themselves in their usual seats. But the teacher was engaged in conversation with another teacher outside the classroom. Several minutes of the period had already gone and the teacher did not appear. The pupils in the meantime had resorted to "funmaking". Five minutes of the class period had elapsed before the teacher entered the room. It took her three minutes more to establish order and to "lash" them for their conduct. The whole procedure took approximately eight minutes, as timed by the writer. Nutt says that "a dragging beginning of the work is difficult to overcome, and the class tends to drop back and lose attention."

\[1\] Nutt, op. cit., loc. cit.
8. ECONOMY IN THE USE OF DRILL.

Very often uneconomical methods of drill constitute one of the chief elements in the wastes that arise from school practices. Colvin points out that drill which is merely formal and not a genuine mental activity, that drill that is monotonous and irksome, that drill which is devoid of attention, which is fluctuating and haphazard, and which is not properly supervised and directed, is likely to accomplish little. Drill carried on under such unfavorable conditions may be expected to give but little improvement in ordinary school practice.

One of the most effective uses of drill which the writer has seen, and which many authors seem to agree upon as very effective, is the use of "Flash cards". In the elementary school the practice is perhaps more often used in the work of arithmetic and reading. Many arithmetical combinations are arranged on cards and flashed by the teacher before the class, one at a time and very rapidly. When the pupil is called upon he is expected to give the answer immediately. This method of using "flash cards" was seen often in visits to algebra, Latin, and chemistry classes in the secondary school. In the chemistry class it was used

1 Colvin, S. S., op. cit., Chapter 9.
by the instructor to improve the knowledge of symbols and variances. By the use of such a device practically all of the class are doing alert and rapid thinking during the whole period of the drill. No time was wasted in getting the association or problems before the attention of the class, and every member was mentally alert in the expectation of being called upon. One teacher in Latin further added stimulus by introducing the game spirit and recording the time taken to run through a given set of cards.

Colvin points out eleven maxims which should be observed by every teacher in the economical exercise of drill, as follows:

1. No learning can take place without practice, but mere practice is not sufficient.

2. The practice, if it is right practice must be uniform and constant.

3. Habits should be formed in the way in which they are to be used.

4. Superfluous habits should never be initiated if they can possibly be avoided, and if initiated should be eliminated as soon as possible.

5. Habits should be formed in the psychological

---

Colvin, S. S., _op. cit._, pp. 220-222.
order rather than in the logical order.

6. In the early stages of habit-formation, progress should be relatively deliberate.

7. Habits formed in one kind of activity do not necessarily carry over to another kind of activity, even when the similarity between the activities is pronounced.

8. Not all habits should be practiced until expert skill is reached.

9. Drill in habit-formation should be directed to the needs of the individual.

10. The few should never be drilled at the expense of the many.

11. The teacher must constantly supervise the imitation and perfection of the habit.

9. ECONOMY IN THE USE OF ILLUSTRATIONS AND DEMONSTRATIONS.

"Begin with the real object and end with the real object, but between the two use the model as freely as you like." ¹

"A straightforward statement of fact dealing with elements that come well within the pupil's range should not be illustrated, so long as the teacher's purpose at the time is only to get the pupil to understand. There is also the risk that the illustration will prove more attractive than the illustrandum. An illustration fails when it derails the interest of the pupils from the main lines of the lesson. Teachers should be very careful in their use of allusive style. In order that the interest of the pupils in the main subject of the lesson be maintained, all subordinate

interests must be ruthlessly dissipated."
"In class demonstrations the teacher must make sure that the essential parts of the demonstration can be seen easily by all the class. Moreover, the teacher must be sure that the demonstration she is conducting will be successful.\textsuperscript{2}

One of the recent movements in education and one which is gradually forging to the front is the use of illustrations and demonstrations in the classroom. Sometimes it is called "Visual Education". The function of such illustrations and demonstrations is to make ideas more definite, and simple, and clearer in the mind of the pupil. However, there are two handicaps which are often pointed out as being of great disadvantage. The first is that an attractive object may in itself be so interesting that the pupil will be entirely absorbed in it as an object of merely enjoyable experience. This fact is often true in regard to the use of moving pictures which have been advocated as a means of instruction. Such pictures, it seems, when used in the classroom should be carefully used. Often they prove to be mere forms of entertainment. Such was the case in a guidance class which the writer had the occasion to visit. In this class moving pictures had been procured showing the various operations

\textsuperscript{1} Adams, \textit{op. cit.}, p. 322.
\textsuperscript{2} Colvin, S. S., \textit{op. cit.}, pp. 257-259.
in the coal industry. It traced the industry and the process of coal from the time it was mined until it was transported to the consumer. During the course of the showing no comments were made by the instructor on the various operations which would have clarified many complications to the pupils. Moreover it was evident that the pupils were more interested in the dress of the miners, in their dirty faces, and in other details not pertaining to the coal industry. They did not seem to realize, for example, the risk of life which the miners took and other details of significance. This was clearly apparent when at the end of the showing, and the pupils were questioned on the various operations, they did not respond to the questions asked by the instructor. Much of the period in which the pictures were shown was a clear waste of time.

Some teachers are of the opinion that it is better not to employ pictures and illustrations at all in the classroom. They maintain that if the pupil keeps the object in his imagination it will prove of greater value to him. Because of this effort of visualizing, the object and its meaning are better stamped on the memory of the child. C. H. Judd, writing about the
use of illustrations in the teaching of Geometry, notes
the following practice. He says:

"Writers on the teaching of Geometry have urged that it is a mistake to give models and photographs to students when they are studying solid geometry. The writer saw this pedagogical doctrine carried one step further by a teacher who did not draw even the flat figures of plane geometry on the board, but required the members of the class to keep the figure in mind after it had been drawn by a movement of the hand in the air before them. This teacher's contention was that reasoning about figures was more exact if the students had the figures in their heads."

Sometimes teachers make the grave mistake of demonstrating a process which can be seen by only a few members of the class. They produce but little impression on the class as a whole. The pupils "get hazy ideas when they should be getting clear conceptions." The writer recalls several experiences in which this wasteful procedure was carried on. In a High School class in chemistry it was the custom of the instructor to perform personally the experiment before the class was allowed to do it. On the day of this particular visit the instructor was performing the experiment of making chlorine gas. The gas because of its suffocating and poisonous odor was made in a hood. In the class were some thirty pupils and all

1 Judd, C. H., The Psychology of High School Subjects, p. 44.
2 Nutt, op. cit., p. 201.
were gathered around the instructor and the hood. One can easily imagine the confusion caused by the group gathered around the hood. About ten members of the group could actually observe the experiment. The others could get only an occasional glimpse of the process. The majority of the class spent the time looking around the room, reading newspapers, and talking with those in their immediate vicinity. Eighteen minutes were used in demonstrating the method of generating chlorine gas. To the majority of the class the entire time was wasted.

In another class in high school physics a teacher was demonstrating magnetism, and was showing the arrangement of iron filings in the magnetic field. The teacher carried on the demonstration at his desk which was slightly above the level of the pupils' desks. Only those in the front rows could see the demonstration. Those pupils in the middle rows of the room tried to see the demonstration by standing in the aisles. They soon got tired of this, turning their attention to their note-books, text-books, or whatever else was near at hand, and completely ignored the procedure. Those pupils who were unfortunate enough to be in the rear seats could see no part of the demonstration whatever. They seemed to realize this at the beginning of
of the procedure, and made no attempt to pay attention or understand the words of the teacher. It was clearly a waste of time to two-thirds of the group. In demonstrations "the teacher should make sure that he has the attention of all the pupils. He should center his attention upon the learning process of each pupil as he attempts to use the device as an aid to learning."

A very good example of economical use of demonstration materials was witnessed by the writer. The class, in this case, was also one in physics. The instructor in charge wished to point out the operations and essential parts of an ordinary motor. To do this he had constructed a model about one-half the size of an original motor. The model could be taken apart and fitted together again, and thus its parts could be shown separately. In order that the motor and each of its parts could be more clearly shown, the wooden parts were painted in various colors, as white, red, black, green, blue, and yellow. In the procedure the motor was taken apart, each part was shown to the pupils, and then the motor was assembled and held together as a whole unit by various screws and hooks. In this manner each operation and each part of the motor was clearly presented to each pupil. The teacher further stimulated interest

---

and at the same time held each member of the class responsible for being able to assemble the model once it was taken apart. The teacher also referred, at the end of the explanation, to the sketch of the original motor, thus smoothing off and polishing up, as it were, the entire demonstration.

On some occasions teachers undertake too much. They anticipate more than can be done in the allotted time, or else some unforeseen accident occurs which causes the thing about to be done to be entirely wasted. Often a teacher promises some definite result which is not obtained. In this respect the writer has in mind a teacher of chemistry who, in mixing two liquids in an attempt to show the formation of certain dyes, promised the pupils that a bluish color would be the result. The teacher was quite surprised to find that the two liquids when mixed did not give the anticipated color. In this instance the several minutes she had devoted to the mixing of the liquids was wasted because the desired result was not produced. "A demonstration", says Colvin, "that does not work is worse than no demonstration."

One very efficient type of presenting a process to the pupils and one in which much time is saved is

---

1 Colvin, S. S., op. cit., p. 259.
recalling some familiar scene to the imagination of the pupil with which he is already acquainted. It is the so-called type of suggesting through analogy. Facts of one situation are compared with facts of another totally different situation. An excellent analogy of this type is given by Judd. The classroom was one in High School physics and it was the purpose of the teacher to clear up to the pupils the methods of the transmission of heat.

"The instructor began by furnishing the students with the imagery necessary to enable them to picture to themselves the molecules and their relations. He asked them if they had ever noticed the way in which bricks are carried in the construction of a building from the supply point to the place where they are to be used. By questioning the class he brought the fact that there may be two entirely different ways in which the bricks may thus be carried. In one case a line of workmen is formed and the bricks are passed directly from one to the other along the line. In the second case the workmen take a hodful and carry it the whole distance. With this analogy in mind, he gave some simple demonstrations to show that in some cases the heat which is applied to substances, such as iron, is passed rapidly from molecules to molecules. On the other hand, in the case of water there is no rapid transmission of heat from molecule to molecule, but heat must be carried by a change in the position of the heated water particles."

Many teachers in the use of illustrations in the classroom wasted much time (see Table on page 55).

1 Judd, C. H., op. cit., p. 325.
Many others did not use the illustrative materials in the room when it seemed to the observer that they could have been used very effectively. The result was a waste of time not only to the pupils, but also to the teacher. Because of its subjectiveness the writer has omitted any discussion of this question.

Of the thirty-eight classrooms visited the following materials were in evidence: blackboards, maps, globes, charts, pictures, posters, cartoons, clippings, diagrams, models, real objects, and other materials some of which were prepared by the pupils themselves. In the use of many of these materials time was wasted by the teacher. Often the waste was due to such things as, for example, in trying to find a place on the map, attempting to clarify a point with the use of cartoon by holding it up in front of the class in such a manner that only a few could see it, attempts to find references in books other than the ones used by the class, etc.

10. ECONOMY OF TIME IN ASKING QUESTIONS

"He (the teacher) must avoid waste of time by keeping to the point, leaving out unnecessary detail, avoiding too much repetition, and knowing when to stop talking."1

1 Freeland, G. E., Improvement of Teaching, p. 128.
"State the topic or the question first, then wait a short time before calling upon a pupil to recite. Avoid calling upon pupils in any definite and uniform order. Occasionally interrupt a pupil before he has completed a recitation and ask another to continue the discussion from that point. If a single pupil is obscure upon any given point do not take the class time to help him out."

A detailed study of the part that the teacher takes during the ordinary recitation was investigated by Dr. Romiett Steven in 1912, and reported in a monograph in which stenographic reports of class procedure form the basis of the discussion. One of the general results of the investigation was that many teachers take far too large a part of the time of the class period, and leave but a small part to the pupils. Although the investigation concerned largely instruction in the forms of questions, numerous examples are given on the comments of teachers on the replies of pupils, and of the individual information given out in a more or less haphazard way during the progress of the instruction. In both questioning and comment many teachers consume altogether too much of the class time.

Commenting on the overwhelmingly large number of questions asked in the classroom, Dr. Steven said this

1 Bagley, W. C., op. cit., pp. 212 and 213.
2 Steven, Romiett, The Question as a Measure of Efficiency in Instruction, Teachers College, 1912. Columbia University Contributions to Education, no. 48.
great number of questions showed that the teacher is doing most of the work instead of directing the pupils in the doing, that the largest educational assets that can be reckoned are mere verbal memory and superficial judgment, that there is no time in the mechanics of the schoolroom to cultivate the art of expression, that little thought is given to the needs of individuals, that the classroom is becoming a place for displaying knowledge rather than a place for getting and using it, that but very little effort is put forth to teach the pupils to be self-reliant mental workers. It is clearly apparent that if such should be the case, then many of the classroom activities are a waste of time.

A very serious waste of time, which does not particularly come under the category of question asking, but which is often the result or outcome of question asking is found in the rambling comments of the teacher. An idea or a fact is suggested, which the teacher takes up and develops without particular thought as to where it is leading or as to its general bearing on the lesson as a whole. The following is a report taken from the notes of the writer: In a Junior High School History class the discussion centered around the Jamestown colony. Mention was made of the first appearance in America of representative government in the organization of the House of Bur-
gesses. The teacher first explained what representative government meant, but not content with this explanation, she next discussed representation in the House of Representatives and the Senate in the government of the United States. This was followed by a statement of how representatives were chosen, the number of senators from each state, and the number of states in the Union. The comments concluded with the question as to what state was last admitted to the Union. The procedure, timed by the writer, took approximately eleven minutes. It was irrelevant and had no significant relation to the question that started the discussion.

One of the faults of many teachers in asking questions, as viewed from the standpoint of economy of time, is that they are addressed to only one member of the class. For this reason many authors advise that the members of the entire group be held responsible for the question. It was apparent in the observation that some teachers have the habit of addressing the pupil to be called upon before the question was worded. The pupil called upon prepared himself for the answer and the rest of the class seemed to look on and rest, with no thought that they were also responsible for the answer. Such questions of this type are, "John, give the properties of NaCl?", or "Mary, what is the purpose
of this scene?", etc. When questions of this sort are asked of only one individual, the procedure can be considered wasteful in so far as the rest of the class are concerned.

Much time is also wasted in assisting or pursuing an individual. The time of the class is wasted while the teacher helps a slow pupil who has some particular difficulty. Such assistance should be given at the time of supervised study. Similarly, class time should not be wasted while the teacher pursues an individual student with various questions. In a class in Latin a whole group was delayed when the translator stumbled and could not get over a certain passage. It would have been a justifiable procedure to have the teacher or a member of the class supply the few necessary words. "Generally, when the pupil's answer is not satisfactory, it is desirable to get the answer from some other member of the class." Also the writer has seen a teacher delay a class for several minutes while he tried to obtain an answer from one student. Despite the frantic appeals of some of the other pupils to be permitted to recite, the teacher said, "No, let Thomas get the answer."

It is too often the practice of teachers to ask too many questions. This practice is wasteful and un-

---

economical in as much as they occupy too large a part of the class period and leave but little time for the pupils themselves. A series of What else? or What next? questions without the final collection and expression by the pupils is a waste of valuable time.

Dr. Steven's report of a lesson of this type furnishes an excellent example. The lesson is on the "Lady of the Lake" and in the report one hundred and twenty-nine questions were asked. The following are excerpts from the report:

T. Do the characters seem lifelike?
P. Yes.
T. Which one is most lifelike to you?
P. I think Fitz-James.
T. How many suitors has Elaine, by the way?
P. Three.
T. Who are they?
P. Graeme, Rhoderic Dhu, Fitz-James.
T. Are these men distinct, three suitors or three three distinct men?
P. Three distinct men.
T. From the beginning has the story lagged, or has it gone on rapidly?
P. I think it has gone on rapidly.
T. No halt in any place, nothing to retard the story?
P. No.
T. What are some of the scenes that stand out in your mind?
P. You mean the one I remember the best?
T. Yes those you remember best.
P. The last scene where Roderick --
T. What happened?
P. Where the men sprung out of the bush.
T. One of the most dramatic points in the story. Anything else? Etc.

---

1 Steven, Romiott, op. cit., pp. 38-43.
And later on in the report are several more questions of this type:

T. Why is so much space given to description and the country?
P. I think it would be necessary, especially when warfare is going on.
T. Kind of thing that happens depends on the country?
P. Entirely.
P. Scott was a lover of nature.
T. For itself?
P. Yes.
T. Do you think the descriptions show familiarity with the country?
P. Yes.
T. What makes you think so?
P. The names are correct.
T. That is true.
P. He has the location of very small matters, the others who are not familiar would not have.

And still further on in the same report and in the same lesson (speaking of hints from the story which showed Scott's "likes" and "dislikes"): 

P. He like nature and animals.
T. What else?
P. Outdoor sports.
T. Outdoor sports, what else?
P. Clan life.
T. Clan loyalty, all right, what else? What kind of a man was he? What does he admire in men and women?
P. Bravery.
T. What else?
P. Fairness.
P. Chivalry.
T. What else?
P. Generosity.
T. What else, Miss S.?
S. Hospitality.
P. Truth, consistency.
P. I was going to say beauty.
T. Yes, etc.
Besides the fact that the great number of questions used is wasteful, there is also that type of question known as the "rephrased question", which is not only uneconomical, but is also confusing to the pupil. This type of question, since it lacks clearness, and since it is stated in various ways leaves the class in doubt as to what is intended. When it is finally answered the answer is sometimes incorrect and another question has to be put to the class. Hence two and sometimes more questions have to be asked in order to produce one answer. The following are examples of this type of question taken from Dr. Steven's report:

"Do you think that the Germans are very mild or gentle? Why do we think this battle of Poiters was such a great benefit; why was the saving of Christianity to the world better than if it had been converted to Mohammedanism? (p. 57).

"Would that be accurate to put down everything that everybody told you? What was the difference between Herodotus and Thucydides; was the man himself upright; did he keep strictly to what he knew was true?" (p. 61).

"That is just right. They were coming to reflect upon things; and what was another thing that went with that? As you reflect upon what you have done and upon what you are going to do and upon what your neighbors are doing, and what you think they ought to do, you grow wise. But what is preliminary to that?"
V. SUMMARY AND CONCLUSIONS.

As has been previously stated, the purpose of this thesis was a consideration of those activities which are most uneconomical and wasteful in the secondary classroom.

In order to make this study, the writer visited thirty-eight classrooms and under the mask of an observer, noted the practices of the teachers in their work. Every apparent wasteful practice was noted together with the amount of time. The conclusions from this study are as follows:

I. It was found that in every kind of classroom there was some type of wasteful practice. The length of its time consumption varied with the type of the class and subject taught.

II. The most common wasteful practices noticed fall under the following categories: the characteristics of the classroom itself, the laboratory, the blackboard, unnecessary copying of questions on the part of the pupils, unnecessary dictation exercises, note taking, beginning of classes on time, drill, use of illustrations and demonstrations, and finally, in asking questions. Arranged in the order in which the most time wasted (average) in minutes, these would be as follows (see table below): drill (17.5), laboratory
work (16.2), unnecessary copying of questions (13.5), at the blackboard (13.5), question asking (10.9), dictation exercises (9.8), use of demonstrations and illustrations (8.6), and failure to begin class on time (8.5).

TABLE SHOWING THE DISTRIBUTION OF WASTED TIME IN VARIOUS TYPES OF CLASS PROCEDURES.

<table>
<thead>
<tr>
<th>Type of Procedure</th>
<th>No. of Rooms Wasteful Procedure Found</th>
<th>Total Time Wasted in Minutes</th>
<th>Average Wasted in Room</th>
<th>Range in Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drill</td>
<td>5</td>
<td>87</td>
<td>17.5</td>
<td>13-19</td>
</tr>
<tr>
<td>2. Lab. Work</td>
<td>6</td>
<td>97</td>
<td>16.5</td>
<td>10-33</td>
</tr>
<tr>
<td>3. Unnec. copying of questions.</td>
<td>6</td>
<td>82</td>
<td>13.5</td>
<td>6-32</td>
</tr>
<tr>
<td>4. Blackboard</td>
<td>4</td>
<td>51</td>
<td>12.8</td>
<td>8-16</td>
</tr>
<tr>
<td>5. Question Asking</td>
<td>11</td>
<td>120</td>
<td>10.9</td>
<td>9-28</td>
</tr>
<tr>
<td>6. Dictat. Exer.</td>
<td>7</td>
<td>69</td>
<td>9.8</td>
<td>4-15</td>
</tr>
<tr>
<td>7. Use of Illus. and Dem. Mater.</td>
<td>3</td>
<td>26</td>
<td>8.6</td>
<td>8-14</td>
</tr>
<tr>
<td>8. Failure to begin class on time</td>
<td>2</td>
<td>17</td>
<td>8.5</td>
<td>6-11</td>
</tr>
</tbody>
</table>

NOTE: -- The above table is based on visits to thirty-eight secondary-school classrooms.
Because of the inexperience of the writer as a classroom teacher no definite suggestions, nor any practical principles could be formulated which would make for the elimination of uneconomical and wasteful practices in the secondary classroom. However, in discussing the problems involving economy of time Stark offers several criteria which might serve to promote more efficient use of the classroom period. These are as follows:

1. The teacher's aim should be to secure the maximum of accomplishment in a given time in carrying out the purpose of education. This involves
   a. Keeping the purpose in mind
   b. Economy of the teacher's time
   c. Economy of the pupil's time.
2. It is necessary to concentrate attention on the more important, and to eliminate the unnecessary.
3. For economy of time, as well as for the educational effect, it is important that each pupil should, as nearly as possible, put forth his best effort.
4. Teachers should not do work which pupils can

---

do with no loss to themselves. Details of a classroom management should be assigned to pupils in accordance with a system which will require little or no attention from the teacher.

5. Economy of time requires system. One should have a definite time for important duties such as preparation of work, professional study, cultural activities, recreation, exercise.

6. In order to save time regular duties should be reduced to habits.

7. In activities involving the participation of several people, time will be wasted unless a plan is developed in advance. Pupils should never be idle while the teacher is doing work which only she can do. Such work should be done outside of class time.
VI. RELIABILITY OF INFORMATION OBTAINED IN SEEKING MATERIAL FOR THIS THESIS.

In as much as the teachers observed in this study were not aware that their procedures were being noted for the preparation of this thesis, and therefore, were supposed to be doing their usual work, these records should be representative of ordinary teaching practices. Accordingly, the wasteful practices incorporated in this thesis are those which stood out in the mind of the writer as examples of wasteful procedures. Not all those practices noted in the observation work are incorporated herein, but only those which best served as an exemplification of a particular wasteful procedure.

The only likelihood of error on the part of the observer may have been in recording the exact length of the wasteful practice. For this reason, the time consumption of the procedure is given in approximate minutes. Unfortunately, the several data-gathering practices employed in this investigation were not directly checked for validity and reliability.

The greatest source of unreliability noticed by the writer was that of variability in teaching performance. It is to be noted that an instrument of reliability is only reliable when it measures what it is supposed to measure.
One can readily see that the surest way of obtaining reliability is to have it checked by another, or to have an agreement or similarity between two reports of the same observer. It was impossible to make two observations of every classroom visited. Moreover, it is reasonable to suppose that the performance of a teacher is highly variable. It is not reasonable to suppose that a teaching performance is constant. The fact, for example, that a teacher may ask forty-one questions during one recitation period is by no means evidence that she or he will ask forty-one questions during the next period.

There is besides the question of reliability, also the question of limitations in the pursuit of data. While the method serves the purpose for which it was used, it has its disadvantages, the most important of which was the number of cases studied. In this instance the number of classrooms visited was small - thirty-eight in all. Many cases are desirable in any investigation. But usually the stress placed on the desirability of a great number of cases is to obtain statistical information, and since this thesis is concerned primarily with observations and not statistics it was decided that a great number of classrooms need not be visited.
APPENDIX

CRITERIA USED BY WRITER IN JUDGING ECONOMY OF TIME IN THE CLASSROOM.

Observation I.

a. Loss of time in beginning the recitation. Does the teacher start promptly? Note causes of delay.

b. Confusion and delay in passing materials (paper, pencils, books, corrected exercises, etc.) Does the teacher have a plan in distributing materials?

c. Careless use of the blackboard. Can the part of the blackboard be seen by practically all of the class? Is the front board used in preference to the boards at the sides and back of the room? Are many pupils sent to the board at once? Do they have ample space to work in? Do they write clearly and neatly? Do they pass promptly and begin their work at once? Is the work of the individual pupil brought to the attention of the class as a whole? Is a large amount of incorrect work written on the board? Is this carefully and emphatically corrected?

d. Lack of a definite plan for conducting the lesson. Does the teacher seem to have a clear aim or set of aims in teaching the lesson? Does the teacher keep to these aims, or does she permit irrelevant questions, wandering discussion, and the emphasis of unessential details? Does the teacher bring the lesson to a proper conclusion, or does she break it off in a hurried and unsatisfactory manner? Are the main points clearly emphasized and summarized?

Observation II.

a. Unclear statements. Does the teacher make vague statements? Does the teacher permit such statements to be passed by when made by the pupils?

APPENDIX - cont.

b. Undue consumption of time by the teacher or by a few pupils. Is the class kept mentally alert by all being called upon frequently to participate, or does the teacher consume a large amount of the time in talking? Does she permit pupils to make long recitations? Does she spend time in asking pupils "pumping questions", in trying to drag information out from them? Does she drill pupils singly, or the class as a whole?

c. Unskillful questioning. Does the teacher tend to repeat her questions, or does she ask the questions once, definitely, clearly, and so that it can easily be heard by all members of the class? If she repeats her questions, why does she do it? Does the teacher repeat the answers of the pupils?
VIII. BIBLIOGRAPHY.


