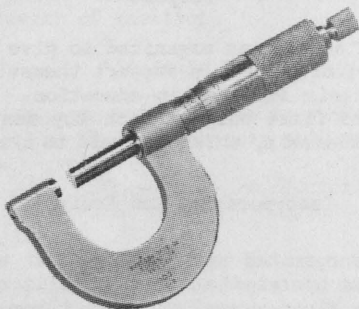


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# Henry Ford Trade School

Dearborn, Michigan



"We try to stimulate boys to think for themselves by working out practical problems and doing practical work. Our text books are the basic things—the materials and forces of nature and human society."

*Henry Ford*

## Founding of School

Henry Ford Trade School was opened October twenty fifth, nineteen hundred sixteen, with six boys and one instructor. The time was divided between the school shop and the classroom where customary high school subjects were studied.

### Purpose

The school was organized to give needy boys an opportunity to help support themselves and to retain their interest in education. To accomplish the first purpose each boy was awarded a cash scholarship, which was paid to him regularly.

### Incorporation and Equipment

Incorporated under a Michigan statute the school is operated as a non-profit enterprise. It has a floor space of about three acres set apart for its exclusive use. All the equipment in the class and shop departments is the best.

### Plan of School Organization

Too frequent changes in work interfere with the progress of a boy by diverting his interest and preventing proper concentration on the task. For this reason the students are divided into three groups. Each group spends one full week in academic work followed by two weeks of shop work. This results in better work in both departments.

Experience has shown that the student accomplishes more with one entire week out of every three spent in class work than he can when each day is divided between class and shop work.

This system results also in developing a certain amount of class and school spirit.

During July and August the class work is discontinued and each boy is given a vacation of three weeks. At Christmas time the school is closed for one week. These vacation periods give the classroom instructors an opportunity to work in the shop and familiarize themselves with that department.

The entire year comprises fourteen weeks of academic work, thirty four weeks of shop work, and four weeks of vacation.

### Academic Work

The class work is planned to cover a period of four years, and the subjects are generally of high school grade.

English, mathematics, mechanical drawing, and shop theory are continued throughout the entire period.

Most of the class work is taught from lesson sheets prepared by the instructors and printed by the school, as suitable texts are not available.

In mathematics much drill work is given on common and decimal fractions. The elements of algebra are taught largely to enable the boy to handle formulas and other equations.

Geometry problems are of the type found in the shop and very little importance is attached to the demonstration of theorems. These relationships are accepted as facts and used as such.

Nearly all the problems in trigonometry are taken from the shop and blue prints of parts under construction in the shop are commonly used in the classroom.

Class work in shop theory attempts to deal with mathematical and other problems arising in the shop. Such matters as the historical development of machines and tools are discussed. Instruction is given in sharpening tools for various purposes, the operation of machines, speeds and feeds of machines, the use of precision tools,

the operation of a dividing head, safety in the shop, and in general such matters as the students must master to become skilled in shop work.

Auto mechanics is taught to familiarize the student with the principles involved in the operation and care of an automobile. In this course rules for safe driving are emphasized.

While the school manufactures no material used in an automobile, many educational trips are taken through departments of Ford Motor Company to give the student first-hand information on the mechanical principles involved in the production of parts. The whole property is used as a vast laboratory, and these trips supplement the work done in the classroom.

Science is studied throughout the entire course. General science is taught the first year. This is followed by commercial geography, physics, general chemistry, qualitative analysis, quantitative analysis, and heat treatment.

The study of metallography (heat treatment) necessitates an elementary knowledge of photography as each boy is given an opportunity to take pictures of the metal samples which he has polished and etched.

In both class and shop work precision equipment is furnished and the student uses it himself.

Besides those subjects which help boys to become scientifically trained workmen the school offers courses in civics and economics in the effort to give the individual better insight into some of the social and economic conditions of our country.

No attempt is made to prepare boys for college. Those who wish such preparation must take history and a foreign language in another school. Many do this for the purpose of graduating from a high school, even though they may not plan to go further. More than ten per cent of the students are taking night work in other schools for this reason.

The academic work of the Trade School has the approval of the State Board of Education and the Educational Boards of Metropolitan Detroit.

Those who finish the course have received an academic training equivalent to three years of high school and an experience equal to that ordinarily secured in a shop apprentice course.

### Requirements for Admission

The school is for boys between the ages of twelve and eighteen. Ordinarily only boys under sixteen are admitted. The educational requirement is that they be in the normal grade for boys of their age.

That the school has met a need in the community is shown by the fact that as many as eight hundred boys have applied for admission in a single day. This is approximately the number that can be enrolled in two years.

Because of this large list, applications from other sections of the country cannot be given consideration.

Needy boys have been given the preference as vacancies occurred. Five per cent of the boys are orphans, and forty per cent of the present enrollment have no father able to help support the family.

### Hours

All students come to school at 7:30 each morning for five days a week. While attending class they are excused at 2:50, but during the two weeks in shop they remain for an eight hour period.

### Scholarship

This school believes that even young boys should learn to do and to make useful things as part of their education.

Operating on this belief the school makes tools and many articles of value. This enables it to pay its students cash scholarships.

Six dollars a week is awarded each boy when he enters, and this may be increased to twenty dollars a week as he progresses.

This cash scholarship is paid to a student every two weeks including his class and vacation periods.

In order to help the student develop the thrift habit \$2.00 a month in addition to his scholarship is given each boy. This fund must be deposited in some bank and kept there as long as the boy remains in school. The bank books are submitted to the school each month for examination.

At noon a hot lunch is furnished the students without charge. This, together with the two cash gifts, makes \$375 the minimum and \$1100 the maximum amount annually received by each boy.

### Shop Work

In the school shop are hundreds of the finest machines of many types. The total equipment is valued at about two million dollars. In this shop there are many departments, and the boys are moved from one to another as fast as they have completed the requirements. An accurate record is kept, not merely of the departments in which a boy has worked, but also of the various operations he has performed in each.

A new boy is always placed on simple operations and is kept on this work until he becomes in a measure accustomed to machinery. He is then transferred to work on a shaper, lathe, milling machine, grinder, and bench, or to work in the trade he decides to follow.

The floors of shops and classrooms are swept by students as part of their training, each boy taking his turn at this necessary work.

As far as possible boys are also given an opportunity to work in the following departments:

Forge	Nickel Plating
Die	Valve Repair
Gage	Car Repair
Hardening	Wood and Metal Pattern
Foundry	Carpentry
Sheet Metal	Tool Repair

In the shop each job is done on a work order. An expert estimates the number of hours required by a skilled mechanic to complete the work. An accurate record is kept, and the boys and instructors try to come within the estimate. Over a period of years the percentage of excess time required has varied greatly, rising to 60% and sinking to 8%. The average is about 25% more than the time required by skilled men.

Much very accurate work is performed by the students. They repair all the micrometers used in the shops of Ford Motor Company. Many operations which require accuracy to one tenth of one thousandth of one inch are performed by the boys. (This paper is about thirty five ten thousandths of an inch in thickness.) This degree of accuracy requires the use of Johansson gages, which are always available to the student.

The spoilage averages less than  $1\frac{1}{2}\%$ , little more than that of the average toolroom. No work is done merely for practice. Everything is to be used unless spoiled. Even in the classroom wherever it is possible practical work is done by the boys. Instruction in mechanical drawing is given during the entire course, and many of the older boys under the guidance of instructors do developmental work for the Ford Motor Company, for which the school receives credit.

In all this training the school holds the following ideals before the boys in the shop and, as far as possible, in the classroom: Cleanliness and Safety come first; then Accuracy. Slow

accuracy is no longer valuable; therefore Speed becomes the fourth ideal. Fifth is Originality, the ability to develop better methods and better work. If a student is satisfied with what his instructor can show him, he can never know the joy of producing something better or of doing something in a better way.

Many boys long to produce, to do something in their estimation worth while, and this institution offers them that opportunity without stopping their education.

### FORD APPRENTICE SCHOOL

Graduates of the Trade School who have become Ford employees and are specializing in some trade and others who have shown exceptional ability receive training in the Apprentice School. A special foreman in the department moves them from one operation to another as fast as they master the work.

During the first two years of this training period or until he finishes the course the apprentice must attend one class each week in mechanical drawing and one in mathematics. These students do all their class work before or after working hours, and for it they receive no pay.

It is from these trained men that the company recruits its foremen and specialty men.

In addition to the classes for apprentices, courses in electricity, steam engineering, metallurgy, and metallography are conducted for the benefit of those employees whose work makes information in these subjects helpful.