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## TRADE SCHOOL PROBLEMS.

W. W. MARQUARDT, Superintendent, Philippine School of Arts and Trades.

TO outsiders, trade schools may seem dull and prosaic institutions; but in the whole educational field of to-day there is no one problem that presents so many diverse phases, that has so many proposed solutions, or that so leads to the very heart of the present demand that our schools must train for efficiency, as that of vocational training. Trade school problems vary not only for different countries, but also for different sections of the same country. A trade school in the United States can not duplicate the workings of the best school in Germany and be assured of success. None of our schools in the Philippines can make a close copy of the best school in the United States and expect thereby the maximum of efficiency. Ideas may be adopted from other countries and then adapted to local conditions with a great measure of success, but many distinctive features must be worked out independently in each locality.

In this article it is not proposed to elaborate any one of the many vexed points of discussion, but simply to marshal in review some of the problems which must be solved before a trade school can rightfully be considered successful. This review will, it is hoped, be of interest even to those who are not directly connected with trade work, as it may present some familiar phases in a new light and may direct attention to others which have not hitherto been carefully considered.

The proper housing of the school and the selection of competent teachers will not be touched upon at present, as each is a complicated problem in itself. It will be assumed, also, that the relative merits of the old system of education which trained for culture alone and of the newer education which trains for efficiency have been passed upon and decided in favor of the latter. But even though efficiency is to be our watchword, can we afford to neglect culture altogether? Can we depend wholly upon shop work and drawing to develop the pupil's mind, to inculcate the principles of honesty and morality, to arouse the latent sense of social and civic responsibilities, and to teach the necessity of service? If shop work and drawing alone are not

sufficient to inspire these results, what academic subjects must be added to the course to increase not only its cultural value, but also its efficiency?

English, mathematics, and science will doubtless be agreed upon as the essential academic subjects to be taught. Having decided upon the essentials, however, our troubles just begin. Shall we worry our pupils by distinguishing between the object and objective complement, deciding whether there is or is not a potential mode, whether "laughing" is a participle or an adjective, *ad infinitum et ad nauseam*? Or can we teach them how to speak and write English correctly without all of this highly favored technical stuff? Shall we have them write essays on "A Beautiful Morning" or learn to answer advertisements in a businesslike manner? In reading, shall we limit them to classical English and instill romanticism into pupils already surcharged therewith? Or shall we show them that there is a literature connected with mechanical trades, teach them how to read and understand newspaper and magazine articles, and give them inspirational reading such as is found in "Captains of Industry," a set of biographies of Franklin, Greeley, and the like? Physics, elementary mechanics, and chemistry are fairly easily selected as proper science subjects, but can we be satisfied with the current methods of teaching physics so that the pupil is well versed in respect to absolute zero but has never witnessed the manufacture of ice? Of teaching chemistry so that the girl student can talk glibly of radium but knows nothing about the action of baking powder? And of teaching mechanics so that the boy can calculate to the foot-pound the force of compact of a projectile but does not understand why a mallet instead of a hammer should be used on a carpenter's chisel? In mathematics, shall we continue teaching tables of weights and measures that we do not use once in a lifetime? Shall we give instruction in cube root and recurrent fractions? Shall we have our pupils memorize the metric tables and solve problems therein while at the same time they cannot estimate the size or weight of a box within fifty per cent unless provided with a rule and scale? Or shall we not only drill our pupils in problems that will arise continually in their life work but also teach them so that they will at least recognize a meter stick when they see it?

Further we have the question as to how much civics and hygiene and sanitation can be introduced. We agree that they should be taught, but how much time can we devote to them if we are to teach a boy a trade in four years? Still further on,

we run up against geography and history, which we cannot possibly squeeze into an already crowded curriculum. Here we shall probably have to content ourselves with teaching English in such a fashion that our graduates will have acquired a reading habit before leaving school and will have learned where to look for and how to find information on special subjects. We shall have to console ourselves with the thought that unless they actually learn to read, they will forget whatever of history and advanced geography may have been crammed into them as soon as their examinations are over, and thus will not miss much anyway.

Then there is the question of drawing. Shall we be satisfied to have a visitor come to our schools and report, as one did recently upon a domestic science school in Germany, that "he found the girls in the drawing department with a good knowledge of conventionalized borders but with absolutely no practice in drawing patterns for use in dressmaking?" Shall we teach a lot of geometrical drawing to pupils whose mathematical attainments make it impossible for them to grasp the more difficult of the theoretical problems, or shall we teach practical geometry applied to shop work and lay emphasis upon the making and interpreting of drawings such as are required in actual work? Shall we compel them to spend a lot of time in making a few fine-looking plates for display purposes, or shall we have them learn how to make quick freehand sketches with accurate measurements indicated? In our attempts at correlating the shop and drafting room, shall we insist upon every job originating in the drawing room and not allow a pupil to make an object until he has first made his working drawing, or shall we recognize the fact that the average workman knows but little about drawings and is unable to learn much more? In other words, shall we devote our whole time to boys who ought to become foremen or shall we also take care of the mediocre pupils whom we can promote from poor muchachos or common laborers to ordinary workmen even though we can not hope to make foremen out of them in a hundred years?

When we drop the consideration of the problems related to drawing and academic subjects and take up those pertaining to the shop, we find ourselves in still deeper water and must strike out for ourselves if we would reach a safe landing. The first choice we must make is that between commercial work and exercise work. Is it wise to plan a carefully graded system of shop exercises and adhere thereto, or should our pupils learn to

do by doing and confine their work to objects of utility from the very beginning? Or is there a golden mean between these two extremes, namely, the use in the beginning of carefully selected exercises of which the great majority are in themselves of a practical nature and then the gradual introduction of commercial work? If we decide in favor of commercial work, how shall we avoid arousing the opposition of outsiders engaged in the same line of business? How shall we prevent the exploitation of the boys in the effort to make a good financial showing for the school? Shall we have a boy make one object of a kind and consider his training on that object completed or shall we have him make a hundred or more of the same kind, ostensibly in order to give him assurance and speed but principally to swell our receipts and make a better showing in the annual report? Or is there here again a golden mean of keeping him at one particular line of work until he acquires a satisfactory degree of speed and accuracy and then passing him on regardless of financial return to the school?

In the management of the shop shall we use the day or piece system? Shall we insist, above all, upon the highest grade of work regardless of time and obtain the result rather easily through the use of the day or time system, or shall we use the piece or contract system and thus make impressive the value of time at the expense of eternal vigilance on the part of the instructor to see that no slipshod work is done? How far shall the instructor give assistance? Shall the boy be compelled practically to fight his battles alone, all along the line, or shall the instructor lay out the materials and do the finer parts of the job himself?

In the use of machinery, where shall we draw the line? The stranger walks into the blacksmith shop and says, "I see there is a steam hammer. Do the boys have steam hammers in the provinces from which they come?" He is told that the pupils must learn to swing a sledge before being allowed to use the hammer. He next visits the pottery department and asks, "Why are the potter's wheels run by hand and not by electricity?" Perhaps he will be satisfied with a reply to the effect that the use of even hand wheels is a great advance over the ordinary provincial methods of making pottery.

In the care and use of hand tools, there are questions to answer. Can a pupil be depended upon to pick up the sharpening of saws during his course, or must a definite time be set apart for such instruction? Should a tool keeper be hired and made

responsible for the tools, or should the pupils alternate in getting experience as tool-room keepers with the necessary accompanying loss of some tools and the corresponding complications with the Auditor's Office? Or should each pupil have a set of tools for his own use, thus making him personally responsible for their care and proper preservation?

What attitude should be taken in respect to the usual student activities? If we have a library, should it be devoted wholly to the trades and allied subjects or should it have in addition some good wholesome fiction that is easy to read and is sure to increase the vocabulary of the reader? Do the trade school boys get enough exercise in their shop work or do they need the usual baseball, volley ball, and group games? Should we observe the usual school hours or should we lengthen out our daily program so as gradually to accustom the pupils to the longer hours of the commercial world? Should we encourage school societies and thus lay perhaps dangerous stress upon political activities that need no encouragement from us and that may tend to wean the members away from the trades? If we have long hours, does it become incumbent upon us to see that the pupils are properly fed at noon or should we leave that to the vender of candy, bananas, and sorbete?

Over and above all these questions are still more important ones. How are we to select our pupils? What assurance have we that they actually desire to learn a trade and have any intentions of following it when they get through? Will written statements from themselves or their parents help solve this question? After having been admitted to the school, what is to be done with the pupil who is proficient in academic subjects and poor in shop work, with the more unusual one who is good in the shop but impossible in the class room or, finally, with the one poor in both? The last case may be disposed of by elimination, but have we solved the problem if we send the poor shop student to another school and thus deprive him of developing the weakest part of his nature? Have we done our full duty if we give nothing but shop work to the boy who cannot get much out of his books but who possesses a mechanical turn of mind? And how are we to know whether a boy has a bent toward ironwork or woodwork? Can we afford to give two years' preparatory work consisting of a half year in each shop so that he and his teachers may judge as to what work he is best fitted? And if we can afford to do this, can the pupil afford to have his trade course lengthened out two more years?

Is it up to us to make a definite study of the various shops in our locality so that we can advise a prospective tradesman of the nature of the trade he is planning to learn, the opportunities offered in that line, and the natural qualities required for its successful mastery?

And after we have given him vocational guidance before entering school and have given him the best we can offer during his training, do our duties cease or are we responsible in part or in whole for the way he spends his vacations and the manner in which he gets located upon graduation? Do our duties as teachers include the management of an outing system whereby students may secure employment at their trades during their long vacations? Must we manage an employment bureau so as to assist our graduates in getting settled in their life work? Must we go even further and keep in touch with all of our graduates for the mutual benefit of both graduates and school?

Such are but a few of the problems confronting those to whom is intrusted the successful building up of a trade school. Scores of minor difficulties will arise in the attempts at the solution of each of the problems enumerated above. Patience in investigation, closeness of observation, soundness of judgment, and independence of action are the necessary attributes of those who hope to cope successfully with these problems. The great opportunities for service and the delight of entering new fields are sufficient incentives for throwing one's heart and soul into the work. The personal satisfaction that comes from service rendered and work well done is ample reward for the dedication of one's whole energy to the practical solution of these problems.

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"The development of skill has as its first object the development of a man's own joy in work and thereby of his joy in life."

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"The child enters into the industrial commercial activity and the life of the world through his hands and his brain. He has very little interest, in general, in things outside his immediate environment, until that interest is stimulated through the work of his hands. To illustrate: Work in wood means images of woodwork, realization of images, interest in all things made of wood, from the simple box to the magnificent structure. The child can not make an article of furniture without always being more or less interested in furniture."—Colonel FRANCIS W. PARKER.