

**UNIVERSITY OF PENNSYLVANIA.
EXPERIMENTAL RESEARCH AS A
FACTOR IN COMMERCIAL
EDUCATION. A THESIS**

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Thesis by Frank Henry Kramer

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FRANK HENRY KRAMER

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**Experimental Research As a Factor
In Commercial Education**

BY

FRANK HENRY KRAMER

A THESIS

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EXPERIMENTAL RESEARCH AS A FACTOR IN COMMERCIAL EDUCATION

INTRODUCTION

In the last five or ten years considerable thought has been given to the matter of experimental research in a number of the subjects taught in our schools. Compared with what has been done in other fields, very little scientific study has been given to the commercial subjects. It is with the hope that such study may be increased, that this thesis is attempted.

Experimental Research in Education itself is as yet an experiment. Its procedures are in process of development. It has not even reached the stage where it has convinced everyone that it is worth while. In fact, it will take considerable time to cast off the opprobrium which has been heaped upon its head. Much of this negative attitude is due, not to real scientific experimentation, but to pseudo-scientific experimentation.

Experimenters in their enthusiasm have not been careful to be truly scientific. They have offered, as valid, experiments which have failed to observe the most ordinary scientific precautions. They have presented and interpreted with statistical exactness data which in itself has been worthless. They have read into the results unwarranted conclusions. Persons outside of the field of experimental research saw these weaknesses and formed an unfavorable opinion of all work conducted in that field.

But there is no reason why truly scientific experiments should not be conducted in educational lines as well as in other fields. It is true that, in dealing with human beings, it is harder to maintain the uniform conditions essential to valid research, than it is in dealing with some clearly defined combination in chemistry. But, if we can isolate the factors we want to test, there is no reason why we cannot get good results. Even with the little work done in this field up to the present time, some reliable conclusions have been reached. With each rigidly scientific experiment, those which follow become easier. Mr. Edison did not succeed with his incandescent electric lamp until after his thousandth attempt, and his experiments with the alkaline storage battery ran up to tens of thousands before he was satisfied with the commercial type of battery. If success comes so slowly in the well-established field of the physical sciences,

workers in the comparatively new field of applied mental science must not become disheartened at tedious hours and small results.

Since educational research is a new phase of science, since the commercial subjects have but recently come into our public school curriculum, and since there are not many scientifically minded teachers of these subjects, it is hardly to be expected that very much research work has been done in determining effective methods of teaching in this field.

An ideal outline for a thesis on the subject in mind would be the following:

- Part I. WHAT HAS BEEN DONE IN THIS FIELD AND WHAT IS NOW UNDER WAY OR CONTEMPLATED.
- Part II. WHAT REMAINS TO BE DONE.
 - a. A LIST OF THE PROBLEMS.
 - b. A SOLUTION FOR EACH PROBLEM.

Something approaching a satisfactory treatment of Part I is possible, and, therefore, it will be included in the outline that will be adopted.

But it is much more than one man's task to work out Part II. It is unwise to pronounce finality on a subject of this kind, because it will always be possible to find someone else who has thought of a problem that has never entered one's own mind. To conceive all the problems in this field would be impossible, and it seems hardly necessary to argue the point.

But even if a list of all the problems in the field could be obtained, it would be out of the question to find a solution for everyone of them, and, if it were possible to find the solutions, this would obviously be the work of more than one person.

Hence, to use this ideal outline would be to attempt the impossible, and, with this thought in mind, the outline will be modified by choosing several of the more strictly commercial subjects, stating some typical problems in each of them, and suggesting a method of procedure for experimentation along these lines.

This thesis then will have two main parts as above, but modified as follows:

- PART I. WHAT HAS BEEN DONE IN THIS FIELD AND WHAT IS NOW UNDER WAY OR CONTEMPLATED.

PART II.

SOME TYPICAL PROBLEMS THAT REMAIN UNSOLVED IN SOME OF THE MORE STRICTLY COMMERCIAL SUBJECTS, AND

A SUGGESTED METHOD OF PROCEDURE FOR EXPERIMENTATION ALONG THESE LINES.

PART I contains an exhaustive list of the efforts made in Commercial Education to solve problems by experimenting. Attempts have been included that are not scientific, as well as those that are, for the reason that the purpose of this thesis is a practical one, and, even though an experiment may not be scientific, it may contain suggestions which may help someone who is trying to solve the same problem scientifically. It may do no more than point out the things to be avoided when the experiment is tried again, but this is sufficient ground for including it.

In PART II no attempt has been made to state all that remains to be done either in the listing of the problems in the commercial field that are not settled, or in the developing of methods of procedure to solve these problems. A few outstanding commercial subjects have been selected and the procedure for typical experiments in these subjects will be suggested. The methods suggested are not given as absolutely valid methods. That judgment cannot be pronounced upon them until after they have been tried out thoroughly. Care has been taken in thinking them out, but anyone who has spent some time in a seminar where work of this kind is conducted knows only too well that, even with 15 or 20 persons passing judgment upon the validity of the method, it is possible to overlook some important details which are not discovered until after the experiment has been completed.

This thesis is written as pioneer work in commercial studies and is therefore likely to have all the shortcomings that we find in such work.

It is earnestly hoped that a considerable number of commercial teachers will, before long, become interested in this line of work and that, by criticising, improving, expanding, and testing the methods presented, they will make it possible to build up a body of scientific data for teaching commercial subjects.