1954

Foundations of Modern Educational Methods.

Abdolreza Arasteh
Louisiana State University and Agricultural & Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_disstheses

Part of the Education Commons

Recommended Citation
https://digitalcommons.lsu.edu/gradschool_disstheses/8105

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Historical Dissertations and Theses by an authorized administrator of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.
FOUNDATIONS OF MODERN EDUCATIONAL METHODS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Education

by

Abdolreza Arasteh
Licentiate in Foreign Languages
Licentiate in Philosophy and Educational Sciences
Tehran University
July, 1953
MANUSCRIPT THESSES

Unpublished theses submitted for the master's and doctor's degrees and deposited in the Louisiana State University Library are available for inspection. Use of any thesis is limited by the rights of the author. Bibliographical references may be noted, but passages may not be copied unless the author has given permission. Credit must be given in subsequent written or published work.

A library which borrows this thesis for use by its clientele is expected to make sure that the borrower is aware of the above restrictions.

LOUISIANA STATE UNIVERSITY LIBRARY

119-a
ACKNOWLEDGMENT

The writer takes this opportunity to express sincere thanks to the Iranian Ministry of Education and the Fulbright Commission in Tehran for nominating him to undertake graduate studies in the United States, at Louisiana State University.

The writer gives grateful recognition to Dr. Benjamin F. Mitchell, head of the Department of Education and the writer's major professor for his guidance and encouragement during the course of his study.

The writer also is indebted to Dr. L. L. Fulmer for his constructive assistance in the preparation of manuscript; without whose practical help the composition of this dissertation would have been impossible.

The writer extends his appreciation to the many individuals in the Department of Education who assisted him and to Dr. Ahmad Arasteh, the writer's brother who has done his best for the writer to complete his studies.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. ON THE MEANING OF METHOD</td>
<td>1</td>
</tr>
<tr>
<td>The nature of method</td>
<td>1</td>
</tr>
<tr>
<td>Philosophy and the nature of method</td>
<td>3</td>
</tr>
<tr>
<td>Logic and the nature of method</td>
<td>9</td>
</tr>
<tr>
<td>Means and the nature of method</td>
<td>10</td>
</tr>
<tr>
<td>Psychology and the nature of method</td>
<td>13</td>
</tr>
<tr>
<td>II. THE UNIVERSAL METHOD OF EDUCATION</td>
<td>20</td>
</tr>
<tr>
<td>On being man</td>
<td>20</td>
</tr>
<tr>
<td>The universal method of education</td>
<td></td>
</tr>
<tr>
<td>In Old Stone Age</td>
<td>21</td>
</tr>
<tr>
<td>In New Stone Age</td>
<td>29</td>
</tr>
<tr>
<td>In Iron Age</td>
<td>32</td>
</tr>
<tr>
<td>III. ANCIENT ORIENTAL CONTRIBUTIONS TO EDUCATIONAL METHODS</td>
<td>38</td>
</tr>
<tr>
<td>Egyptian contributions</td>
<td>39</td>
</tr>
<tr>
<td>Chinese contributions</td>
<td>46</td>
</tr>
<tr>
<td>Ancient Indian contributions</td>
<td>51</td>
</tr>
<tr>
<td>Ancient Iranian contributions</td>
<td>56</td>
</tr>
<tr>
<td>IV. GREECO-ROMAN CONTRIBUTIONS TO EDUCATIONAL METHODS</td>
<td>63</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Greek contributions</td>
<td>63</td>
</tr>
<tr>
<td>Early Athenian society</td>
<td>64</td>
</tr>
<tr>
<td>Pre-Socratic philosophers</td>
<td>66</td>
</tr>
<tr>
<td>Later Athenian contributions</td>
<td>68</td>
</tr>
<tr>
<td>Contributions of Socrates</td>
<td>69</td>
</tr>
<tr>
<td>Contributions of Plato</td>
<td>72</td>
</tr>
<tr>
<td>Contributions of Isocrates</td>
<td>79</td>
</tr>
<tr>
<td>Roman contributions</td>
<td>83</td>
</tr>
<tr>
<td>V. CHRISTIAN CONTRIBUTIONS TO EDUCATIONAL METHODS</td>
<td>86</td>
</tr>
<tr>
<td>Christ as a teacher</td>
<td>86</td>
</tr>
<tr>
<td>The contribution of early Christianity up to Medieval Ages</td>
<td>91</td>
</tr>
<tr>
<td>VI. ISLAMIC CONTRIBUTIONS TO EDUCATIONAL METHODS</td>
<td>98</td>
</tr>
<tr>
<td>Contribution to the higher educational methods</td>
<td>98</td>
</tr>
<tr>
<td>Contributions of Jabir</td>
<td>105</td>
</tr>
<tr>
<td>Contributions of Razi</td>
<td>107</td>
</tr>
<tr>
<td>Elementary educational methods</td>
<td>109</td>
</tr>
<tr>
<td>Contributions of Ibn-Sina</td>
<td>111</td>
</tr>
<tr>
<td>Contributions of Al-Gazel</td>
<td>112</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Contributions of Tusi</td>
<td>113</td>
</tr>
<tr>
<td>Contributions of Sa-di</td>
<td>115</td>
</tr>
<tr>
<td>Contributions to the broad problem of method</td>
<td>116</td>
</tr>
<tr>
<td>VII. THE CONTRIBUTIONS OF THE MODERN</td>
<td></td>
</tr>
<tr>
<td>EDUCATORS TO THE EDUCATIONAL METHODS</td>
<td>122</td>
</tr>
<tr>
<td>Introduction to modern civilization</td>
<td>122</td>
</tr>
<tr>
<td>The philosophical basis of acquiring knowledge</td>
<td>123</td>
</tr>
<tr>
<td>Contributions of Comenius</td>
<td>132</td>
</tr>
<tr>
<td>Contributions of Locke</td>
<td>137</td>
</tr>
<tr>
<td>Contributions of Rousseau</td>
<td>143</td>
</tr>
<tr>
<td>VIII. THE CONTRIBUTIONS OF MODERN (CONTINUED)</td>
<td></td>
</tr>
<tr>
<td>EDUCATORS (CONTINUED)</td>
<td>151</td>
</tr>
<tr>
<td>Contributions of Pestalozzi</td>
<td>151</td>
</tr>
<tr>
<td>Contributions of Herbart</td>
<td>160</td>
</tr>
<tr>
<td>Contributions of Froebel</td>
<td>167</td>
</tr>
<tr>
<td>IX. CONCLUSION</td>
<td>176</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>185</td>
</tr>
</tbody>
</table>
ABSTRACT

The problem in this study is an analytical approach to the philosophical and psychological principles of educational methods, as containing elements in the history of progress of man. The educators may better understand these principles of educational methods, comparative principles from East and West being presented by a student of both cultures. Only by correlation of the two cultures can one understand the significant contributions and their sequential effects upon modern principles. The growth of educational methods of the East and West in historical form is given as supporting evidence of the weight of the influence each has upon the other. Modern educational methods will be directly traced to the embryonic development of education to show that the early principles and methods are conclusively the basis of present day educational methods.

Therefore, in the first chapter, the writer is concerned with the nature of method as containing elements of philosophy, psychology, logic, and means. Philosophy gives the principle of method; logic and means are interpreted as tools to help the processes of method and psychology assists method to find the proper approach to learning.
On this psychological and philosophical basis, the method which deals with conflicting values and ethical traits is called the broad problem of method and is discussed according to philosophical principles. Specifically, the method which deals with a learning situation is called the narrow problem of method and is discussed on the psychological basis.

The nature of man in terms of common sense, science, and philosophy are discussed in Chapter II. Certain attributes of man are granted as the basis of his learning process. The primitive, universal and educational methods employed by man in his evolutionary progress from a state of savagery to a state of barbarism and then to a stage of civilization are interpreted.

Chapter III is concerned with the steps toward civilization and the contributions of ancient Oriental nations to educational methods. In interpreting the contributions of the Oriental systems of education careful attention is given to the philosophy backing these systems and their expected outcomes.

Chapter IV is concerned with Graeco-Roman contributions to educational methods. The contributions of pre-Socratic philosophers to scientific methods is discussed. An attempt is made to interpret the contributions of ancient Greek and Roman educators on the basis of their philosophical and psychological ideas on the nature of man,
nature of knowledge and the nature of society.

Chapter V deals with Christian contributions to educational methods. It is concerned with Christ as a great teacher. A comparison is made between Christ’s principles of teaching and those of outstanding modern educators. The contributions of medieval ages, monasticism, chivalry and the guilds are briefly interpreted.

Chapter VI is concerned with the development of methods in the Islamic culture. Quranic principles and the assimilated contributions of previous nations are taken as the foundations of Islamic contributions to the educational methods. The writer has presented the contributions of the great exponents both to the scientific methods of higher education and the development of the elementary education. The teaching of Quran is taken as the foundation of the discussion of the broad problem of method.

Chapter VII is concerned with the cultural movements of fourteenth, fifteenth, and sixteenth centuries as the basis for the development of philosophical doctrine in seventeenth century, which established foundations for modern educational theories and practices. The theory of knowledge introduced by John Locke is traced. The development of that theory by his successor, David Hume is taken as the cornerstone of naturalistic and developmentalistic methods.

The contributions of the great educators on the
discovered principles of the operation of minds to the educational methods is continued in Chapter VIII.

Consequently, Chapter IX classifies all of these discussed contributions into three major periods: a period which considered the child as a miniature adult, a period which recognized the difference between childhood and manhood, or the age of Rousseau, and a period of individual differences, or the age of Thorndike. The educational methods employed in each of these periods are classified in terms of merit.

The historical method of research has been employed in the preparation of this study. The sources have been read and evaluated in terms of technical and philosophical qualifications. The accuracy of any source has been judged by external and internal evidence. The judgment of that accuracy has been based on critical realism, and always the writer has tried to follow the law of cause and effect in the interpretation of the elements of this manuscript.
By a Method in education is meant the way in which a teacher puts educative agents and means to work upon human nature so as to produce some desired result. Thus a book may be used as matter to be understood, or to be understood and remembered, or to be merely memorized without understanding, or to be understood, remembered and used in the solution of problems. Thus, to produce the result—knowledge of certain facts in chemistry—the teacher may describe the facts orally, or have students read printed descriptions of them in a text-book, or demonstrate the facts by experiments, or get the students to perform the experiments themselves.

Edward L. Thorndike
CHAPTER I

ON THE MEANING OF METHOD

Introduction

The nature of method is interpreted in this chapter as containing elements of philosophy, psychology, logic and means. Philosophy gives the principle to method; logic and means are the tools to help the processes of method and psychology assists method to find the proper approach to learning.

I. THE NATURE OF METHOD

Etymologically speaking, the word method is derived from the Greek word "methodos," which means "pursuit of." It does not indicate a particular kind of persuasion. Specifically it is used for a situation such as method of science, which means a pursuit of knowledge, and generally could be used for any kind of organized or non-organized aim.

It is a pathway between an aim and a principle, which applies to a series of acts in going through that pathway. It sometimes shortens the way to the goal, formulates the acts to achieve a particular type of outcome and supervises the actions toward the aim.
The name method involves a doer as well as a receiver. Certainly the doer always is an individual who acts according to a certain principle. The receiver sometimes is another individual who limits the freedom of the action of the doer or who cooperates with him. He, the doer, could be the receiver, or physical facts could be the receiver.

A clear statement and a definition of method is rendered difficult by the fact that it differs from one doer to another; from one principle to another; from one aim to another. Method involves philosophy, logic, social demands, social control, psychology and various means of operation.

Limiting the meaning of method to the boundaries of education, would include a twofold interpretation. Learning the details of a subject matter field, or considering the best way of living are both included in education as a whole. The former is called the narrow problem of method and the latter is considered the wider problem of method. The narrow problem of method is a learning situation which includes only a single response of many varied reactions of the learner. The narrow problem of method includes the laws of learning and is obviously psychological. Because the broad problem of method deals with conflicting values and ethical traits,
it is philosophical. Both the narrow and the broad problem of method depend upon the range of the series of actions which take place between principle and aim, including the aim itself. The general plan of this series of acts points out whether the method is good or poor.

II. PHILOSOPHY AND THE NATURE OF METHOD

Idealism and Method. Philosophically, we suppose this principle "Esse est percipi" is accepted as the corner-stone of truth and the criterion of values. According to this principle, any survey of the objects of human knowledge goes to the world of ideas — ideas of senses, ideas of mind and ideas of imagination. The colors and lights with their several degrees which we have by sight, the hardness and softness, the heat and cold, the motion and resistance which we perceive by touch, the odors which we smell, and the sounds which our ears convey to our mind are all ideas. In short, any aim based on a better understanding of this doctrine implies a unity between subjective and objective worlds. It involves reducing objectivity into subjectivity, physical phenomena into the mental outcomes, things into images and sensations into perceptions.

There is likewise something which perceives, compares, compounds, divides, abstracts, and generalizes all these ideas. This active being is what is called mind, spirit, soul and self. Thought is the common element in which the mind and soul or self and spirit identifies itself with the object. This process is the reduction of objectivity to subjectivity and is called learning which involves the method of its own as Brubacher points out:

In this ground of unity between the self and the objective world is discovered the laws of motive in learning, in obedience to which means in reaching must be wielded. We have seen that the fundamental fact of human spirit is a striving of its own impulse to realize itself, and to this end it craves to make its own the world of thought which lies beyond it. Man instinctively feels that, beyond his own life in the world about him, there is a life akin to his own; which must flow into his own to satisfy his longing for more life. He feels that everything is the manifestation of a universal life of which his own life is a part; and that to realize his possibilities he must participate in that universal life. This is the meaning of the proverbial curiosity of the child...this feeling of unity with the subject under discussion is what is known as interest, the most pervasive idea in art of teaching. The word interest (inter and esse) means to be between. When a pupil feels that the subject before him stands as a means between his present real self and his future, ideal self, he is interested in that subject.  

According to this system of philosophy the pupil is inherently endowed with a curiosity to seek knowledge. The pupil feels that his present stage is primarily baffling

---

and superficial. He ought to reach out after the more mature experiences to attain for himself a greater insight, which is a more intricate knowledge than he previously possessed. The present status of a child may be considered as a thesis, the next stage of learning should be antithesis and then the transcendental stage, a synthesis. The ideal teacher would then be the "Hegel" of this subjective dialectic method of approach to learning. The teacher is the main guide to set up the principle; to prepare the means and to lead the pupil from the merely temporal stage to the eternal realm which is the source of values and absolute aim.

Realism and Method. Realism starts from the doctrine that things are what they seem. According to this system of philosophy, matter is the main substance and the facts are at the end of a long causal chain. A dynamic activity corresponds to all of the events that happen in the whole universe. This fact is clearly shown as Breed points out:

The world is composed of two kinds of stuff, mind and matter. It is called materialistic because the important content of the universe is believed to be a vast aggregation or organization of physical objects, and it is spoken of as epiphenomenalistic for the reason that consciousness is regarded as an inert by-product of certain physical events, accompanying them as inconsequentially as the curtain of fog that hangs over the waters of the briny deep, or the negligible shadow that follows a
man in the sunshine. This essentially is the type of world that Sir Isaac Newton left as a cultural legacy. It is one of the forms of realism.

According to this theory mind, spirit, soul, feeling and perceptions are reduced to body reaction and sensation. The realistic method tries to reduce any subjectivity into objectivity. The objects are the cause and the main factors of producing subjective results.

An example of this form of realism would be to take a large number of bricks, a number of skilled laborers, some of the well prepared iron, metalwork, fireproof wood, modern machinery, and other correct tools; then to construct a building as magnificent as any in the world. In the organic world a few cells meet together combine and emerge as a creative organism that might be a Shakespeare or an Einstein.

In general any aim based upon the foregoing principle will develop a distinct method. The method of achieving that goal is found in the logic of the facts which accompany the inexorable laws of nature. When facts are extremely clear and extremely distinct they fall into classes which can be definite in terms of logical order and always come under the rules of definition and classification. These facts also fall into systems in

---

which each part connects every other part, such as the links of a chain, to the extent that they resemble neat patterns of mathematics.

Pupils of the realistic school instead of only listening to the teacher begin to observe, make experiments and try to examine the principles before accepting them. They usually live in a world of facts, think in terms of number, participate in setting up the real aims, use a method of measurement and accept tested principles.

**Pragmatism and Method.** According to William James, pragmatism is based on "...an idea is true so long as to believe it is profitable to our lives. That it is good, far as much as it profits...." Pragmatism is also reinforced with Darwin's theory of evolution and has led Dewey to emphasize life as education, and educational aims vary indefinitely. Dewey says, "...differing with different children, changing as children grow and with the growth of experience on the part of the one who teaches." 5

Immediate aims in the pragmatic school occur in the form of problems which stimulate the child and under certain conditions cause him to give certain responses.

---


Life's basic needs stimulate the organism and the child starts to act. Practicability stands as the center of learning. William James expresses this idea in saying: "You must bring out from each word its practical cash-value, set it at work within the system of your experience." ⁶

Therefore according to the pragmatic school of thought the curriculum comes out of the numerous facts of life facing a child in the form of problems. The learning process occurs in terms of problem-solving which includes: (1) seeing the problem (observation), (2) gathering data (activities), (3) making hypothesis (generalization), (4) testing. The experimental method, the method of discovery, the unit method and the daily assignment method all are the result of the foregoing doctrine.

Consequently, all these systems, idealism, realism, and pragmatism are perhaps tangent. All are partially truthful, but indeed, each system of philosophy involves certain methods of pursuing knowledge, setting up values, and achieving presupposed aims. As a philosophical conclusion, when the principles differ the methods founded by those principles also differ.

⁶James, op. cit., p. 77.
III. LOGIC AND THE NATURE OF METHOD

From the standpoint of logic, Socrates belongs to the age of ambiguity of definitions. All his dialogues, especially those with the Sophists, indicate this fact.

Most of the dialogues show how Socrates goes from simple facts to complex, from particulars to generals, from concrete to abstract, and from ambiguous terms to distinct, clear statements. He usually discusses problems and vague definitions until the solution of problems were evident and definitions were refined.

Plato, 327-347 B.C., in his academy, employed the dialectical method of Socrates, and as a result led Aristotle to produce his "Organum."

Organum, as its meaning indicates, was an instrument of right reasoning and Aristotle emphasized the inductive method as well as the deductive. He stressed the need of observation and experiment as he himself had made hundreds of observations on animals and plants.

Aristotle's chief improvement on the Socratic dialectic was that he perceived more clearly than either of his predecessors the role of concrete experience in the teaching method. He believed that the Socratic method was moving in the right direction in striving to reach universals by induction.7

The same "logic" led the great thinkers of Saracen culture to do research in the fields of optics, chemistry, medicine and so forth, and exercised considerable influence on Roger Bacon.

Since Aristotle employed both the inductive and deductive methods, it seems strange how logic has limped on the deductive leg for centuries. Evidently the answer lies in the influence of Plato's biased idealism, the system known as neo-Platonism, and the introduction of Christian authority that reinforced the old idealism and encouraged the trend away from the inductive method. Therefore, logic and the scientific method of inquiry laid dormant in the social conscience for centuries.

For a period of three centuries the crusades caused some changes. East and West were brought in touch with each other and produced various problems for both. Geographical exploration, after the dark ages, awakened the curiosity of many thinkers. Travelers returning from newly discovered lands revealed new customs and new religions and new riches. As a result, John Locke introduced the principle that there are no innate ideas in the mind and all behavior is learned.

The "revival of letters" and the rise of great men stimulated the dawn of scientific thinking. Some of the most notable were: Petrarch, Dante, Boccacio, Aristo, Montaigne, Cervantes, Spencer, Wycliff, Marlow, Shakespeare
and Thomas More. The impact of the writings of these men changed the "social conscience" of Europe and eliminated many traditions, superstitions and embedded customs. New ideas were popular and examination of "why's and how's" made it possible for a new way of reasoning, thinking and doing to arise.

Another mark of progress which brought about the revision of the method of thinking and approaching factual goals was the rise of scientific inquiry and outstanding scientists. Copernicus (1473-1543) published his De Revolutionibus Coelestium Orbium. Kepler (1571-1630) confirmed the Copernican theory. Galileo (1564-1642) encompassed the whole physical universe with mathematical research. Bacon (1561-1626) wrote his Novum Organum. These scientists with many more, caused the awakening of the senses of judgment of millions and gave them a new outlook. As soon as the philosophy of life began to change in the masses, new values, new aims and interests were born. The "sleeping leg of logic," INDUCTION, began to come to life and new methods of inquiry such as the method of agreement, the experimental method, and correlation method, the differentiative method slowly began to unfold. The reader should note that these methods are employed in all branches of science and stand as a basis for the science of education.
Before closing the discussion of "Logic and Method" and going to the application of "Psychology and Method," it seems logical to draw the picture of "means," giving its proper value and discussing its appropriate place in relation to method. Selection of "means," sometimes is so important that the means and appropriate psychological use under a well prepared logical rule replaces the method itself. Thorndike states:

By a method in education is meant the way in which a teacher puts educative agents and means to work upon human nature so as to produce some desired result. Thus a book may be used as matter to be understood, or to be understood and remembered, or to be merely memorized without understanding, or to be understood, remembered and used in the solution of problems. Thus, to produce the result—knowledge of certain facts in chemistry—the teacher may describe the fact orally, or have students read printed descriptions of them in a text-book, or demonstrate the facts by experiments, or get the students to perform the experiments themselves.8

Perhaps one of the failures of the inductive method from the time of Aristotle to Bacon's age is the lack of means for a careful observation of: (1) particular organic and inorganic instances, (2) the process of generalization, (3) the process of reasoning and drawing conclusion. The history of progress of mankind, especially that of the last three centuries, tells us how, in the light of means, unknown facts become known and universally accepted. An

example is that of Pasteur in the course of his experimentation, after inventing various devices he made these unknown facts become known facts. History also shows how physicists have discovered new energy, how chemists have discovered new protons and electrons, how biologists have discovered the function of genes, how astronomers have found new planets and how educators have discovered scientific measurements of individual differences all because the means for logical thinking preceded these discoveries.

It then becomes evident that method without means is wandering and means without correlation to certain situations under psychological order are nothing but play tools. When the means are properly used the result is obvious and the goal is achieved; both doer and receiver are successful.

IV. PSYCHOLOGY AND THE NATURE OF METHOD

At the beginning of the definition of the problem, it was stated that method involves a doer as well as a receiver. When the aim is selected from the inorganic world, the doer possesses a great opportunity. In solving a problem or getting the best result from prearranged means, the doer works on physical facts, uses the help of external devices for his purpose and he is the real actor. The whole series of necessary acts is fulfilled by him. The
doer possesses full authority over the complete series of facts. He is free to act using various means.

When the aim is a change of behavior of an organism, the problem is quite different and there is certainly a strong need of psychology. In this case, the doer is called the teacher and the receiver is considered the learner. The teacher possesses a variable freedom in his action. The teacher's acts are correlated with the teaching means and the learner's abilities.

Naturally, in most of the cases when the teacher and the learner are working toward an accepted end, neither of them alone obtain the result of the teaching-learning problem. Their actions are interrelated while the teacher in the light of psychology is aware of the total of activities which should be completed. Psychologically speaking, the teacher knows when the learner has readiness and is thus able to assist the learner to use the proper means to follow proper steps in learning.

The development of psychology, especially the progress which has been made in understanding the nervous system, indicated the neural basis of thinking. The famous formulas of stimulus-response, known as S-R, has helped the student of method to better understand the internal function of the organism. As Kilpatrick says: "Learning means changing the path among the neurones so as to join
a new response to an old stimulus."9 Again the laws of learning and the importance of the child's mind-set are illustrated by Kilpatrick:

If the child has a strong purpose, this as mind-set pushes him to attain his end. This mind-set makes ready his inner resources for attaining the end. When he succeeds, those ready neurones and the success both mean satisfaction....10

Psychologists, in the light of careful studies on organisms, point out that in any given situation the child responds not singly but variously, that is differently to each separate part of the situation. What is learned by these various responses is called "simultaneous learning." These various responses are tied together and they must be considered together in teaching. Kilpatrick expresses these ideas:

In the half hour when a boy is failing his grammar lesson, he is not only learning or failing to learn that specific lesson, but he is also fixing or unfixing an attitude toward the subject of grammar, another attitude toward his teacher, another toward the schools, another toward himself with reference to grammar and school and his ability and disposition generally. He may be getting interesting suggestions for further study into language when a favorable moment shall be present itself, or he may be hardening his heart on the whole


10Ibid., p. 25.
mater. He may be deciding that school and 
parents and the whole tribe of governors are 
unfeeling tyrants, that wrong to them is right 
to him, that right to him is success in get-
ting by with his unbridled impulses. These 
are some of the heads under which this boy has 
been learning during his half hour of grammar 
study.11

These facts stress the theory that learning involves 
the whole organism; physical, emotional, and mental. This 
theory emphasizes that learning is not all mental. It is 
in terms of specific behavior and as a result, teaching 
should be in terms of modifications of behavior.

The need of knowing where the child stands and the 
need of guiding him all the way through the steps of life 
has given way to the development of evaluation and measure-
ment on a scientific basis. The teacher must know the kind 
and degree of learning that has taken place, so that he 
might criticize his teaching and guide the child to a more 
advanced degree of learning. The development of various 
test such as; intelligence tests, questionnaires, rating 
scales, experiments, case-histories, sociometrics, achieve-
ment tests, and aptitude tests help educators to see the 
difficulty of educational problems. Not only the methods 
of teaching differ from one individual to another but they 
also vary from a single personal problem to another, within 
the same individual.

11Ibid., p. 10.
As a result of these psychological factors, teaching methods now involve:

1. A knowledge of the previous degree of learning which has taken place.
2. A knowledge of the upper limits of the ability of the learner.
3. A knowledge of the necessary acts and types of work which should be done in problem solving.
4. A knowledge of the needs and interests of the learner.
5. A knowledge of the weaknesses of the learner.
6. A knowledge of future needs of the learner.

The development of various scales led psychologists to the discovery of individual differences as stated by Galton and brought to the public by Thorndike. These original differences are due to heredity and environment in the following categories: (a) sex, (b) ancestry, (c) chance variation, and (d) maturity and previous education. With regards to differences, Thorndike says:

As a result of the differences originally present or produced by growth and training, education has to be specialized into means and methods. Many types of schools are needed, not only to prepare for different careers, but also to fit different natures. Within the same school and class, variations in the kind, amount, and quality of work demanded and in the help given are also necessary. The competent teacher expects variety in human beings and examines each pupil to learn what he really is and needs. From the variety of
If in education there is a need of studying the curriculum for knowing what to teach, obviously, there is a need of psychology for finding "how to teach," that is the method of learning.

Considering the historical development of the educational methods there might be three major periods: (1) a period of considering the child as miniature adults, (2) a period of treating children as children but alike or the age of Rousseau, (3) a period of individual differences or the age of Thorndike. However, there is no distinct dead-line for each period but the discussion of these periods is the main task in the present work.

Conclusion. A method of teaching means a series of continuous acts taking place between a principle and a goal which produce some desired result, namely a change in the learner's behavior. A method of teaching is founded on a system of philosophy; a method of teaching starts with a principle that is derived from that system of philosophy and ends with the aim; a method of teaching involves appropriate means which are handed from the teacher to the learner while achieving a certain goal.

\[12^{\text{Thorndike, op. cit., p. 70.}}\]
In education the aims deal principally with a change in the organism. The organisms are different, and the individual differences if taken into consideration necessitate the methods of teaching being different. So that there are as many methods as the number of souls, or perhaps as many as the great number of problems which occur in the teaching-learning realm. The best method for a learner in a particular situation cannot be the best for all. A single method of teaching correlated to a single teaching-learning situation cannot be applicable to all persons.

In a learning situation, at first the child starts a series of random activities; secondly, he sees the problem, thirdly, he observes and gathers information, fourthly, he develops his information and uses it in the solution of the problem and lastly, he makes it universally accepted by testing.

Therefore, the teacher's responsibility is to follow these steps of learning in a systematic order by: (1) direct motivation, when there is readiness, (2) selecting the means of learning and relate these means to the steps of the activities, when there is the need, (3) directing the learner to the aim, when there is interest.
CHAPTER II
THE UNIVERSAL METHODS OF EDUCATION

Introduction

The nature of man is interpreted in this chapter. The man's attributes are taken as the cornerstones of the learning process. The methods which were used in the period between the beginning of man's state of savagery to the end of his state of barbarism correlated to the evolutionary progress in the "old stone age," in the "new stone age" and the "age of iron" are discussed.

I. ON BEING MAN

Man is in contact with a great complex world. He is also a sample of this complex world. Many answers are given to the question, "what is man's nature?" There are many speculations, interpretations, ideas, and explanations to this problem, each of which is partially true, yet unsatisfactory.

Common sense in its narrow scope of validity explains the nature of man by designating him "just a person." That is a person who "...comprises the first-hand, concrete unsystematic acquaintance with himself and his neighbors that every person gets in the course of his
work and play and daily struggle.”¹ The average layman’s outlook is based upon everyday experience, that is, common sense. He is viewed in practical situations and sometimes is judged at once on his actions. Most laymen judge only on the basis of external observation saying, “Just watch him in action for a while and see how he behaves.”²

Sciences add to this common sense concept by making careful studies to try to reduce man’s subjective elements to the objective facts. Following the methods of mathematics, the scientist measures man’s cells as accurately as possible, tests his behavior, and suggests a systematic acquaintance of man with his neighbors. Yet science has failed to point out man’s nature:

In like manner, the sciences seek a view of man more diagrammatic, more accurately informed, more coherent, and more general than the vivid but miscellaneous insights of practical common sense, or “experience.”³

The biological sciences take it for granted that all the processes that concern biophysics and biochemistry and prove that “man is a complex animal evolved from simpler forms, and essentially like them in physical and mental behavior.”⁴

²Ibid., p. 5.
³Ibid., p. 2.
⁴Ibid., p. 25.
Philosophers, like scientists, also start from a common sense basis. After considerable study on man's nature, they have called man a social product, individual creature, intellectual animal, standing animal, laughing animal, reasoning animal, thinking animal, Tabula-Rasa,homme naturel, economic product, and introspecting animal. This work does not deal with the accuracy of what laymen believe, what scientists point out, or what philosophers claim. Its purpose is not to discuss how much of the endless story of man is told truly and how much of it must be included in unknown facts, but to emphasise the fact that man possesses natural potentials which have aided him in learning specifically and in building his culture generally:

(1) Man is a maker of tools, and a user of tools. His skill with tools helps him to develop for himself an extraordinary physical environment.

(2) Man is naturally teachable. He is able to learn and to master learned behaviors.

(3) Man possesses a complicated nervous system. He is endowed by nature with a brain, large in comparison with his body. This complicated nervous system enables man to be stimulated and to give responses. This complicated nervous system is a help to man in his establishment of a culture.

(4) Man is able to observe and to do experimentation.
Even though he might call his mind a "Tabula-Rasa," he possesses ability to choose his experiences, not only external experiences but also internal ones.

(5) Man is able to utter more meaningful and a greater variety of sounds than any other species of animal. In other words, man is endowed with language. Words help him to develop for himself a mental environment. Language is a vital tool for transferring his experience to his fellowmen.

(6) Man's childhood is wholly dependent upon his parents. Man's dependency upon his parents lasts longer than most animals because of his prolonged infancy.

(7) Man possesses a capacity for what is termed the abstract, which is probably an exclusive prerogative of the human species. Man is able to observe simple ideas, compare them, and make new ideas.

(8) Curiosity is another endowment given to man.

Curiosity in children is but an appetite after knowledge, and therefore ought to be encouraged in them, not only as a good sign, but as the great instrument nature has provided to remove that ignorance they are born with, and which, without this busy inquisitiveness, will make them dull and useless creatures.  

(9) Man is able to transfer his experience to his offspring. He is a dweller (dwells) in living cultures.

---

that held in one common life generations of the past and the present.

(10) Man is creative and possesses two hands in a form which enables him to coordinate his actions with his thoughts and thus get better control over his physical environment.

(11) Although man, in possessing impulsive drives, associative memory and practical intelligence has been classified as an animal species, he is also endowed with abstract intelligence which makes him a completely harmonious and potential system. Certainly, drives motivate man's behaviors and are the most essential to his life, but it is man's abstract intelligence which enables him to the manifestation of the "recognizable" mind and assists him to stand outside of his ego and contemplate it objectively.

Man of early days, man of dark ages, man of Renaissance, man of atomic age, man of East, man of West, white man, black man, and yellow man, tall man, short man, and the like possess these qualities that have been effective on his education. As a result of these endowments:

Like any other animal, the human child "learns by experience," the appropriate responses to a specific situation. It must find out the right movement to make in relation to any external event, and build up in its brain the appropriate connections between sensory and motor nerves. And, as in the case of young mammals, the process of learning is
assisted by the example of parents. Even a young rabbit will try to imitate its mother, and thus will learn how to choose its food and avoid danger that actually threatens it. Such education is common to human and animal families. But, in the case of man, the process of education is transformed. The human parent can teach not only by example but also by precept. The faculty of speech, that is, the physiological constitution of the human tongue, larynx, and nervous system, endows prolonged infancy with a unique importance.

On the one hand, prolonged infancy involves family life, the continued association of parents and children for several years. On the other hand, physiological conditions, as already indicated, allow man to emit a great variety of distinct, articulate sounds. And a particular sound or group of sounds, a word may be associated with a particular event or group of events in the external world. For instance, the sound or word "bear" may conjure up an image of a particular sort of dangerous but edible furry animal, together with readiness for the actions appropriate to an encounter with such. The first words may, of course, have in themselves, to some extent, suggested the object thus denoted. 6

II. UNIVERSAL METHODS OF EDUCATION

Possessing these qualities man began to adapt and learn early in his history. He developed from a state of primitive life to a state of barbarism, then to a state of civilization which is now in the "atomic" age.

It can be now asserted upon convincing evidence that savagery preceded barbarism in all the tribes of mankind, as barbarism is

known to have preceded civilization. The history of human race is one in source, one in experience, and one in progress. 

The discoveries and inventions which to the archaeologist appear as tangible proof indicate a pattern of simple life for early mankind. In ancient time, life was simple and education as informal as life itself. Early people limited their aim to their own survival, then to their species and consequently to the survival of the experiences of their ancestors. Their teacher was nature and education took place within everyday living. Experience was the only method of learning for elders and elders the only guide for the children.

The period between the beginning of man's state of savagery to the end of his state of barbarism is characterised by three stages of development, each of which vitally influenced the lives of early people and, therefore, affected their training of children.

The first stage was the age of food gathering. That was the "old stone age." Education in this period was conditioned by these factors: child was a burden to hunter; the provision of food was made for early people by nature; actually the population was very small in number.

In this early period, people lived by gathering

---

wild berries, roots, eggs, and grubs on a restricted habitat. Later they lived by fishing and killing other animals. They made their coats of skins and erected rude shelters of boughs. Perhaps a good example of this period would be the first part of *Robinson Crusoe* by Daniel Defoe.

In this period, as well as in the coming ones, the integral part of human education was teaching the child to speak. That involved teaching the child to utter recognised sounds and associate those sounds with objects or events to which the sound should refer. Thus, the language became a means of interaction with others; at first, with parents at home, then, with all the people who spoke in that language. Once this had taken place, parents through the use of language, using language, instructed their children in dealing with situations which could not be illustrated by example or direct teaching. Thus, speech became a vehicle by which parents could convey their experience to their children. Later on, it became a means of communication between all the members of a group who spoke that certain language. It served as a help to forewarn children of dangers, gave speed to their learning and was a primary factor in the development of teaching. It also helped the early people to throw a web of talk over the world of action through which man was gradually drawn away from learning by doing. By means of speech, external relations with others, by the help of
natural qualities which the child possessed and by constant contact with the physical world, the child learned.

The early child started to get his experience in his family. There were strong demands made upon the child to conform to the behavior pattern of the group. The early behavior pattern of the family was, therefore, important. The child observed from his babyhood the family behavior pattern. He observed his parents in choosing their food, in making their clothes and in erecting their shelter.

Later, in his childhood, he moved about freely, he sought the companionship of those outside of his family. Perhaps he played in a small group consisting of only two or three children of his age. In this period, the play group was not organized and was almost limited to the immediate neighborhood area. Gradually, the elder would guide the children in their activities and lead them to social cooperativeness as well as physical fitness.

In his boyhood, the child would observe his parents accurately and imitate them in gathering food, making clothing, and erecting shelters. The child's activities through imitation were fused with his parents actions and sometimes with the actions of neighbors. Imitation involved doing which led the child to master the skills of his elders.

Later, in his youth, he discovered by experience the stones for making tools, the best branch for making a
spear, and a thick stick in his strong arm became a club. He eventually discovered by experience that a shaped implement was far more serviceable than an unshaped one and so he began chipping flints into rude hatchets, knives, spears, and the like. Through observation, imitation and personal experience, the early child was taught how to live and how to conform to the behavior pattern of the family. Perhaps something about group relations was learned in terms of abstract examples and precepts.

The second movement of the primitive and barbarous states started with food producing, meaning the discovery of the art of cultivation; that was the new stone age.

This period in reference to the human progress bearing on child development was characterized by the child being useful to life; man being able to control his food supply; and existing in larger communities.

Human history reveals that the creation of new industries and new economies have furthered the increase of man's species and have brought changes to man's life. In the new stone age, that was after the introduction of cultivation, man began to plant, cultivate, domesticate animals, and improve by selection edible grasses, roots and fruitful trees. He also succeeded in taming and attaching to his family life certain species of animals. In return for the fodder, he was able to offer the production he could afford.
As man set up his economy on the basis of cultivation, a great variety of plants such as rice, wheat, barley, maize, and sweet potatoes appeared in abundance which supported considerable populations. The new economy affected the lives of all concerned as well as the desire to survive which was the basis for the education of children. Given favorable circumstances, a community could produce enough food to meet the requirements of success and make possible the multiplication of the human race. As a result, personal experience interrelated with other's experience became community experience. New living conditions developed as a result of this innovation. In the old stone age the child was a burden to hunters. He had to be nourished for years before he could begin to contribute to the life of the family and learn how to participate effectively in hunting. In the new stone age, the child became economically useful. Quite a young child could participate in weeding the fields and minding cattle. Children were an integral part of the group and learned naturally as they contributed.

What parents imparted to their children was not only their own personal experience, but something much wider, the collective experience of the group. In all of the aspects of education of the time; that was, from field activities to the home making, from the primitive knowledge of the right seasons for hunting, and the different species of game and fruits, to the observation of the phases
of the moon and the rising of stars for the plant cultivation. The human child was taught rules and precepts of action through participation in what the members of his group and their ancestors had found beneficial. It is also clear that the human family learned to cooperate and act together in getting their livelihood. This brought about a form of social organization beyond the simple family. Thus, a larger group of the children from the neighborhood played together, as a result better physical fitness and other qualities developed. Being together, a group of children developed some sort of activities. If activities are not innate in children, at least they are characteristic of children. Play-groups helped the young children to develop themselves physically and to learn from one another. Play-groups caused the development of children's character, common interests, and intimate relationships with others.

Another primary group is the play-group, especially of children or as Young calls it, "the congeniality group." It also is an intimate face-to-face relationship and one in which, to varying degrees, a we-feeling exists akin to that within the family. Frequently temporary in character, especially among small children, common interests are developed and common activities are planned and carried out by the group.\(^8\)

In conclusion, in the new stone age, children through observation, imitation, precept, examples, participation in

life, and play were trained for life. Educational aims were simple and the methods of learning unsystematically practical.

The third stage of development of the primitive and barbarian states began with the discovery of bronze and iron. This period in reference to man's progress and in particular to child development was characterized by: growth of cities, regular organized societies, development of applied sciences, children's activities in apprenticeships and their learning by an unsystematic method.

The discovery and use of bronze and iron naturally involved specialized industries. Agriculture was made successful and thus it was possible for the community to produce a surplus of foodstuffs to support the miners, smelters, and smiths, who had been withdrawn from direct food production. This new industrial movement brought significant changes to the human family and gave impetus to the rise of applied sciences. Ultimately, there developed a regular army of craftsmen such as copper-smiths, blacksmiths, carpenters, brickmakers, potters, glaziers, stone-cutters, goldsmiths and jewelers. In the process of making tools, early communities had to build up a scientific tradition, that involved noting and transmitting what were the best substances, where they were to be sought, and how they were to be handled.
The industrial revolution which was as a result of the discovery of iron and bronze, also affected man's attitude to nature, promoted the growth of institutions, caused the existence of the applied sciences and this, in turn, led to the development of abstract sciences as currently understood.

The second result of the primitive industrial revolution was the transformation of some tiny villages of self-supporting farmers into growing towns and cities. These cities nourished by secondary industries and foreign trade later grew into organized states. The regularly organized growth of large cities brought about a constant growth of merchants, transport-workers, officials, soldiers, leaders, and priests; all supported by the surplus food-stuffs produced by cultivators, herdsmen and hunters. The regularly organized community involved the discussion of every fresh experience, and tested as a whole and eventually incorporated in the collective tradition, which affected education. The organized community also administered the social and religious ceremonies and organized group play which were effective on the character building of the children.

The early group activities were frequently of an imaginative character. The influence of the elders' imaginative play gradually formed traditionally accepted patterns of organized games. These organized games later
on appeared as a copy of life-activities of the community. The child would use small arrows and a bow to imitate his father at the hunt. Sometimes a child would act as a potter, a weaver, a mother or a father in play form. Through riding a wooden horse, the child would play and imitate his elders activities. Participation in these games, primarily was doing things that the child could not do alone. The child would soon learn that he had to help others if he wanted to continue to be a participant. The little girl who always wanted to be the mother or the boy who insisted on being first at bat found that he had to give way to others. Through the games the child was helped to be adjusted to the group's interest and attitudes. Participation in play taught the child that difference between the playmates and members of the family. Playing created the first experience of intergroup opposition for the child and taught him the benefit of cooperation. Informally playing developed the child's physical qualities, improved leadership and effected his group behavior.

Social ceremonies which led youth to be a member of society and a religious group were effective in the building of the character of the youth. These ceremonies exemplified in the lives of youth were effective on the traits of character that the society held to be noble and right. Respect for elders, bravery, stoicism, and generosity were considered some of these noble traits of character.
Then the social and religious ceremonies and group play should be taken as a part of the wider problem of method and effective on personality qualities.

Concerning the applied sciences, in this period, the goldsmiths could make wire and solder; they produced delicate chains and elaborate ornaments in filigree work. The coppersmiths were the masters of the hammer and of casting. They could provide their fellow craftsmen with a variety of delicate and specialized tools; axes, adzes, drills, knives, nails, and needles. The jewelers could pierce the hardest stone and engrave them for seals. The carpenters made boats, chariots, couches, harps and lyres. Some industries such as the textile industry, not only required the knowledge of special substances, like flax, cotton, and wool, but also the production of these substances.

All these occupations named from garden culture to weaving, have been rendered possible by the accumulation of experience and the application of deductions therefrom. These all involved practical science. The exercise of each craft is throughout regulated and directed by a constantly expanding body of practical sciences. Children were useful to the craftsmen but at the same time contributed to the development of civilization. They followed naturally their parent's footsteps. They were sons or daughters at home as well as apprentice at work. They were a helper to
the craftsman and a student of their chosen vocation at the same time. They learned while they were contributing and later in life, as a master of the art, they would continue to advance the experiences and successes of the craft. Experience was the method of the masters. The apprenticeship consisted of examples, orders, making and doing exercises.

...The appropriate lore is handed on from parent to child for generation after generation. The cultivator, for instance, must know in practice what soil it is most profitable to till, when to break up the ground, how to distinguish young grain shoots from sprouting weeds, and a host of other details. The young potter must learn to find and choose proper clay, how to clean it, with what proportion of water and grit it should be mixed, and so on.

Thus there grows up to be handed on a great body of craft lore—smippets of botany, geology, and chemistry, one might say. If we may judge from the procedure of modern barbarians, the legitimate deductions from experience are inextricably mixed up with what we should call useless magic. Each operation of every craft must be accompanied by the proper spells and the prescribed ritual acts. All this body of rules practical and magical, forms part of the craft tradition. It is handed on from parent to child by example and by precept. The daughter helps her mother at making pots, watches her closely, imitates her, and receives from her lips oral directions, warning and advice. The applied sciences of neolithic times were handed on by what today we should call a system of apprenticeships.9

Conclusion. Being a child, regardless of place and time, having basic elemental drives, involving extreme external and internal sensitivity, possessing a complicated nervous system, needing food, shelter, and clothing; being able to utter familiar sounds and living for a certain period of time within family is able to learn according to the merit of his abilities.

Early children whether they were at home or in the field, whether they were at work or play; whether they were north or south, east or west, they were taught in terms of observation, imitation, examples, precepts, stories, commands, participation, doing and making, playing and apprenticeship, and trial and error. Without a doubt, these methods were not systematic or formal but conformed the child to the behavior pattern of his family and the community in which he was a member.
CHAPTER III

ANCIENT ORIENTAL CONTRIBUTIONS TO EDUCATIONAL METHODS

The steps toward civilization are indicated in this chapter. On the grounds of the philosophical ideas in Egypt, in China, in India, and in old Iran (Persia), and on the foundation of the expected educational outcomes, the contributions of the aforesaid ancient nations are interpreted, both in terms of the narrow and the broad problem of method of education.

I. INTRODUCTION

Steps toward civilization: The economic revolution described in the previous chapter brought about populous cities which led to organized states. There evolved a body of accumulated experiences and applied sciences. The beginning of writing and of mathematics coincided with the revolution.

The new economy needed a new method of transmitting knowledge. The invention of writing filled that need and marked an epoch in human progress. By its means a man could immortalize his experience and transmit it directly to contemporaries living afar and to generations unborn. A child could get the basis of fresh experience in a short time through learning the chain of previous studies.
Certain sciences, such as mathematics, surgery, medicine, alchemy, as well as ancestral information such as history, customs, and tradition, were made the subject of written treatises. They thus formed a body of learned sciences accessible only to those who had been initiated into the mysteries of reading and writing. Writing was an art, a profession learned only through a long apprenticeship. This profession was open only to those who could afford to pay for that long term of apprenticeship.

The second revolution brought about a division of society into classes. In practice, kings, priests, nobles, and land owners stood apart from peasants, fishermen, artisans, and laborers. The scribes belonged to the upper class. Writing was considered as a respectable profession, especially to the tradesmen. Admission to the schools did not depend upon birth but the "reading public" was a small minority in a vast population. Literacy in general came thus to be valued as a stepping stone to personal and social rank and not as a key to knowledge. The ability to read and write provided manifold opportunities for new experiences as well as a key to previous experiences.

II. EGYPTIAN CONTRIBUTIONS

In Egypt, geographical conditions hastened urbanization. Urbanization introduced complexities into social life and caused problems that required more advanced education
for their satisfactory solutions. Irrigation security for better agriculture; mechanical needs of commerce; religious training of priests; professional needs of lawyers and medical doctors and imperialistic needs to construct pyramids brought about professional and ruling bodies. This caused the rise of a noble class and a demand for a practical higher education.

The utilitarian philosophy of the Egyptians developed the sciences which were obviously concerned with improvement of Egyptian crafts. Egyptian mathematics, medicine, astronomy, astrology, surgery, alchemy, engineering, mechanics, geography, music, and architecture aimed at satisfying specific needs felt by Egyptian Society and were the outcome of the pragmatic Egyptian philosophy of life. Perhaps this is the reason why the Egyptians did not discover conceptual thinking, deductive reasoning, and creative imagination.

The method of instruction given to a student of mathematics or medicine was essentially the same as that given to an apprentice in metallurgy or weaving. The apprentice watched his master at work, received precepts from his masters, and then he himself set to work under his master's eye to be corrected when he went wrong. Just in the same way, the pupil, scribe, or doctor watched his professor demonstrate simple examples of treating actual cases; then the pupil treated the actual cases under his
professor's guidance. In addition to this, there must have been oral instruction, copying old texts, and taking notes while observing a new problem. In this manner the method of instruction sometimes became similar to that of doing research. Although there was a lack of systematic, scientific methodology, progress of higher education in old Egypt was largely due to experimentation. The following geometrical evidences indicate how the early Egyptian used a very concrete method for solving mathematical problems. Without doubt methods of demonstration, drawing, and making geometrical figures were employed in teaching.

The terminology of ratios that Egyptians used illustrated a very concrete proof of mathematical thought. For instance, at the present time it is said 1/10 (1:10) is the ratio of the gradient of a hill, while at that time it was expressed as a length measure.

Length was denoted as XY/AY per unit of slope that was expressed in terms of palms. (XY = one unit of lengths)

The greater was AY, the lesser was the slope. For instance, there is less slope in the following example than in the previous one.
The area of a wheat field was calculated as $L \times B$; that is, length times breadth, which is true for a rectangle or a square.

For polygonal fields the area was calculated as triangles and rectangles or even $\frac{1}{2}$ the sum of two adjacent sides multiplied by $\frac{1}{2}$ the sum of the remaining sides.

The volume of a truncated pyramid was found by this formula: $V = h \left( \frac{a + b}{2} \right)^2 - \left( \frac{a - c}{2} \right)^2$ in which $(h)$ is the length and $(a)$, and $(b)$ are the respective sides of the rectangular base. This was a good approximation.
For circular areas instead of \( \pi r^2 \) the formula used was \((d - 1/9)^2\) in which the value of \( \pi \) is \((16/9)^2\). This is a close approximation of what is used today which is \(27/7 = 3.142\).

Babylonians in 2000 B.C., used the value of \( \pi = 3\) which was less significant that that of Egyptians.

Economic needs of the urban revolution, that of business transactions, revenue administration, and weighing and measuring demanded that even some of the members of the lower class acquire a knowledge of writing and arithmetic.

Methods in teaching addition and substraction were simply counting abbreviated by memorizing results already obtained. Instead of counting step by step in adding, for example 5 to 9, the Egyptian notation gave the graphic expression to the fact. The Egyptians did not multiply by memorizing the results. They used the method of duplication which is stated by Childe as follows:

Multiplication is a further abbreviation of addition. To multiply 5 by 3 means to add three 5's together. We learn at school the result is fifteen. The Egyptians do not seem to have recorded this result as something to be memorized. In any case, they never applied the process familiar to us. They always proceeded by the method of duplication. They added the multiplicator to itself. But they did remember 12 \& 12 (i.e 12 x 2) = 24, and abbreviated the process to that extent. An example illustrates this method. This is how the Egyptians would work out 12 x 12 and 14 x 80:
They wrote one total column opposite the multiplier, and then doubled each side until in the first column they had numbers totaling up to the multiplier, checking off the relevant lines. They then added up the corresponding figures in the second column.

In teaching division the child was taught to draw up tables of the reciprocals of numbers between one to sixty.

<table>
<thead>
<tr>
<th>1</th>
<th>5</th>
<th>2</th>
<th>10</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>60</td>
<td>10</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>30</td>
<td>7</td>
<td>7-30</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>20</td>
<td>8</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>15</td>
<td>4</td>
<td>320</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>144</td>
<td>4</td>
<td>1120</td>
<td></td>
</tr>
</tbody>
</table>

Therefore, instead of dividing by five, for example, the pupil multiplied by its reciprocal twelve.

The economic, religious and governmental needs of the urban revolution, coupled with the ready use of papyrus and other writing material, encouraged the development of writing, making it possible for writing to pass beyond the pictographic stage. Vocational efficiency then included the ability to write.

The Egyptian child, therefore, learned by writing

rather than by reading. Writing was taught by drill in copying. Copying includes various stages: (1) Copying many symbols of important objects, (2) copying the more important characters, (3) copying lines, (4) copying from papyrus of long lists of systematic names, both common and proper, (5) copying letters, bills, the customary records, and contracts. After long, slavish copying, the pupil secured further training through apprenticeship in assisting his father, or in an office, where he learned the proper forms and developed his handwriting. The method of apprenticeship also was used in teaching numerous crafts such as manufacturing glass, goldsmithing, copper-smithing, blacksmithing, and pottery making. The one who was interested in becoming a scribe was trained in the temple college. Through systematic copying he stepped up the ladder of learning. He copies Sacred manuscripts, official documents, stories, religious works, and school books. Consequently, through imitating the priests and higher officials, through the production of practical works, and through tedious labor and slavish writing the pupil became a scribe.

The broad problem of method of education in ancient Egypt was a product of its authoritarian type of government. Blind conformity to the national customs and uniformity of conduct were essential in the child's habits of conduct. He was required to comply with the habits and ideas of
his family, his social fellows, and his masters or rulers.

In conclusion, it seems necessary to point out the importance of Egypt as a crossroad. Alexander's invasion resulted in a closer relation between the Eastern Mediterranean and the Western Mediterranean. It also brought together international scholars at the University of Alexandria. Aristotelian methods of discovery, which employed systematic observation and experimentation, were employed. Through these methods of inquiry Euclid's geometry (323-283 B.C.), Archimedes mechanics (287-212 B.C.), and Eratosthenes' science of geography developed and was transferred to Europe in the following centuries. Physiology was taught by methods of demonstration and projection (objective method). There existed samples of each member or part of the body. Different nationalities, Romans, Hebrews, Greeks, and Iranians came together and conducted scientific research until the downfall of Alexandria in 30 B.C., by the Romans.

III. CHINESE CONTRIBUTIONS

In China, the problem of methods of education was the outcome of the social order and the result of the political life of China's people. Politically, China developed from a primitive organization into a highly developed feudalistic state and then into an absolute
monarchy. Authoritarianism in China involved obligations, responsibilities, duties, and submission. These were the keys to the relation between sovereign and subject, landlord and peasants, master and apprentice, teacher and pupils. The inferior was taught submission to the superior. The relations between government officers themselves as well as the relation with the people were based on regulations of conduct.

However, Confucius deemed reverence, love and obedience equally necessary for social relations; but practically, the Chinese society was based upon the Emperor's order and the people's absolute obedience. A strict enforcement of law with heavy punishment for violations was the actual basis of the Chinese social contract. This was the foundation of the broad problem of educational methods in China.

The center for most of the training under the philosophy of duty was naturally the home. Even though China did develop the school as an educational institution, the family continued to be the agency for the practical training of the child as had been the case in primitive times.

"Honor thy father and thy mother" has always been for the Chinese, the first and most important Commandment. They regard piety as the root out of which all other virtue grows, the cornerstone of society.2

One of the five fundamental relationships in Chinese society was the relation between father and child. Love, fear, obedience, reward and punishment were effective in bringing the child up so that he conformed to the behavior pattern of Chinese social relations. If the father, or later the teacher, called the child, he should not merely say "yes" but must also rise. Training a child in the "path of duty" started in the home. The family life practically acquainted the child with the official rules and regulations and the social customs and manner of the society in a practical manner.

As a result the social and family behavior pattern, in the form of an omnipotent authority of tradition and practical method of living, suppressed the individual dignity, perpetuated national ideals, related social and individual development and secured social and royal stability.

The traditional Chinese social system distinguished four different classes, namely; scholars, farmers, mechanics, and traders. A small number of children who formed the class of scholars were given instruction. These scholars had to master the tradition of the past and preserve the past. The narrow problem of method of education for transferring the traditional heritage to the next generation was an outcome of ancestral worship and a product of traditional philosophy. At the elementary level, reading and writing
were taught. In the first year discipline was harsh and cruel. The method was laborious and the result uncertain. The child's first task was to learn the characters of the Chinese language. The child had to learn how to tell what a symbol or character meant by looking at a sign placed after it. The sign was called determinative. This elementary learning process usually took place by spending hours in copying the symbols in order to learn to write them; at first, the child traced the characters, but later reproduced them from memory. After finishing this primer, which was meaningless to the child, he had to learn the Book of Surnames, Pin Kio-Sing. The child had to memorize a long list of Chinese family names. The object of the teacher was to compel the child to remember. Therefore, after each lesson, the child turned his back to the teacher when he recited. He had to repeat the characters in exact order and at the highest possible speed. As soon as he could recite his first lesson without error, the child was given the next one. The child promptly went to his place, sat down, and started shouting the symbols loudly.

When the child had learned to write and to read, the sacred books were committed to memory. The child was required to recite Confucius's classics; perhaps without any understanding of them. At the higher stages some attempts were made at interpretation of the sacred books and essays which were written in classic style. Tremendous
Emphasis was put upon the memorization of great masses of traditional classics. Through essay writing the pupil learned to imitate the classics closely, paying attention to details and then mastering the classical style of writing. The method of teaching at the school of the emperor Chou for his own son and a minority of Chinese families was based upon imitating long essays after the style used by Confucius and his pupils. Every third year the scholars went to take the Emperor's examinations. The scholars were locked in separate cells and obliged to work for hours writing essays. This was the government official test which led the scholars to the highest governmental positions.

Other social Chinese classes, especially merchants and artisans, generally, formed guilds which governed such methods as apprenticeship, prices and wages and Chinese vocational training. There was no organized physical training as such except that which resulted from military, domestic, and vocational participation.

Consequently, the broad problem of method in China was characterized by regulation, duty, order, reward, fear, love, obedience, and punishment. The narrow problem of method of instruction started with training, copying, reproducing, memorizing, and reciting the symbols of the language. In higher education, the student equipped with the necessary knowledge of symbols proceeded to the imitation of classic styles through essay writing, interpretation of classics, and taking government examinations.
In China, as in other societies, there were outstanding teachers, such as Confucius, 551-475 B.C. Confucius was a master teacher who respected his pupils and used to adapt his teaching methods to the need and capacities of the individuals. In this he resembled Socrates. Confucius maintained close personal relations with his pupils and would give them enough opportunity to think about what they had learned and to perform what they were taught. His methods of teaching involved practical application, besides reasoning and thinking. He emphasized the necessity of understanding the individual's abilities, needs, and attitudes. Confucius's educational ideas were forgotten because there were not enough teachers to carry out his methods of teaching and because his methods were not organized soundly enough to meet the approval of the ruling social classes.

IV. ANCIENT INDIAN CONTRIBUTIONS

In India, the narrow problem of method of education started with the learning of Veda which was a sacred duty for all castes except Sudras. As soon as the parents of a Aryu* performed certain numbers of sacramental rites, the child's first stage of life began. This occurred when the

---

*The members of the Brahmans and Kshatriya Castes were called Aryu.
child was about seven years of age. The child was sent away from home and handed over to a master to be educated. He was called a Brahmanakarin, a student of the \textit{Veda}.

In learning to write, the child used his fingers or a stick, and formed the letters in sand; later, he wrote upon the palm leaves and finally used ink upon paper. The child usually followed his master's style and imitated his master's writing. At the same time he learned his master's views and philosophy of life.

In learning the \textit{Veda}, the teacher repeated a sentence in a sing-song tone which the pupils repeated after him. Cultivation of the memory was a most important feature of the school, and recitation, the single method of acquiring a knowledge of the \textit{Veda}. \textit{Veda} was learned by heart by reciting and daily praying practice. The pupils were expected to understand the hymns of \textit{Veda}.

Simple arithmetic was taught by drill and practice. Problems were calculated and solved orally. Multiplication and division tables were strongly emphasized, as a student was supposed to know multiplication tables up to twenty from memory.

Under a mild discipline and a friendly relation by means of the method of imitation in writing, recapitulation and reciting in reading, memorization, understanding, and interpretation in learning \textit{Veda}, the pupil completed his elementary education.
Higher education was in operation in universities, monasteries, and hermitages. In universities such as International University of Nalanda and Taxila, conference, discussion method, and method of discovery were employed in teaching-learning processes. In five thousand monasteries with a population of more than two hundred thousand monks, debate, apprenticeship, and discussion were practiced as teaching methods. In early hermitages of well known sages, and in conferences convened by great kings in which representative thinkers were invited, conference and discussion were the methods of exchanging their points of view. By the help of these methods Brahmans became thoroughly educated in different fields of philosophy, literature, astronomy, mathematics, medicine, and religion:

Nalanda was famous for the wider Catholicity of its method for the liberal character of its curriculum. Through discussion and debate and conference according to the traditional Indian method it helped to unite its varied elements into a superb intellectual fellowship and the wide variety of subjects taught provided a veritable feast of reason. The curriculum included all the systems of thought, then prevalent in the country, in spite of the fact that Nalanda was the center of Mahayanist studies. The Vedas, the Upanishads, the works of different philosophical systems, as Samkhya, Vaisheshika, Nyaya, were studied and taught as also the arts and sciences of the Hindus. 

\*Nalanda and Taxila were situated in the North of Indian Magadha.

Of course, the monit tional system of instruction which was used in 1797 by Dr. Andrew Bell in England originated in India. This has been the main contribution of India to educational method and has strongly aided efforts toward universal education. In India they employed older pupils to assist in the teaching of the younger.

Physical education, or health training, vocational training, domestic training and military training were acquired indirectly, perhaps by the primitive methods.

In India, the broad problem of educational method was a product of the Indian philosophy and the outcome of the Indian Caste system. Indian philosophy flourished through Vedas, the sacred literature which interpreted education as a preparation for the life to come and this life as a constant subjective evolution. The result of Veda was the laying down of the four fundamental motives of human living, Artha (money), Kama (love), Dharma (religion), and Moksha (salvation). Man's vital interests and needs, his desires, his ethical and religious life and destiny were all dependent upon them. This philosophy, therefore, demanded a passive virtue of patience, resignation, peacefulness, gentleness, politeness, and docility.

According to this philosophy, each individual child was born as a debtor and under a mild discipline would be brought up to respect his elders while he was at home, to
be polite and respectful in living with his master, to obey authority during the time of normal living, to inspect the "self" while he was within the period of withdrawal and spiritual preparation.

During the first seven years while the child was at home he usually practiced how to respect his elders. During the time of studentship he used to obey his master, carry out his orders blindly, perform duties, say his prayers twice a day, fetch the water, gather fuel for the altar, sweep the ground around the hearth and wait on his master. Perhaps precepts, order, telling and a friendly, respectful relationship were the main guides for training the child's behavior. During the second period, when he was a married man, a Grihastha, a householder, an artisan in his craft, a farmer in his field, or a merchant in his business, he behaved peacefully in society and obediently to the authorities.

Self-inspection, concentration, meditation, devotion to God (Bhakti-Yoga), reasoning, (Jnana-Vaga), psychic-control, and mental performance were the main methods of spiritual preparation during the Forest Life.* Through these methods the highest level of life was achieved and expressed in the words, tat-trum; Thou art it.

*Forest-life was a stage of life in old Indian philosophy of life. It began after accomplishing the real married life. The man left his family and in nature began his spiritual preparation.
In conclusion, the broad problem of educational methods in ancient India were characterized mainly by precept at home, order at school and work, command in society, meditation, reasoning, self-inspection, concentration, devotion, and psychic-control in seeking the eternal self. The narrow problem of teaching method was characterized by memorization, imitation, recitation, and understanding in the elementary level — conference, discussion, debate, and perhaps method of discovery in higher education.

V. ANCIENT IRANIAN CONTRIBUTIONS

In Iran, the realistic teaching of Zoroasthra, the prophet of Iran, emphasised "life" and contribution to it as the aim of education. The practical significance of his teaching brought about methods of activities more advantageous than that of reflective methods. Learning was emphasised in teaching of Zoroasthra and even was sought in daily praying. "Oh Ahura-Mazda, endow me with an educated child; a child who would participate within his community; a child who would fulfill his duty in the society; a child who would strive for the happiness of his family, his city and his country; an honourable child who may contribute to others' needs." 4

At home, the child was educated under the mild affection of the mother so that he could conduct and direct himself. The five year old child was accepted in the state public school, an Agora, meaning the Free (an open forum or Square free from buyers and sellers). The Agora around the public courts was divided into the four parts of which one was reserved to the boys. There in their division, under expert teachers who were supposed to be models of virtue, the child's education began.

At the elementary level, the teacher used to ask the child to read loudly, to practice speaking so as to make him ready to join the public conferences, attend the meetings and adjust to the society. A part of the child's time was spent in studying Zend-Avesta, the Bible of the Parsees. Through singing, discussion, and writing, the child learned his religious lesson. The close participation of parents with the state and teachers made learning easier. The law of the state concerning education and the religious responsibility of the family in bringing up the children were interrelated. The teacher made his teaching enjoyable by choosing examples from the great historical events of the nation, giving illustrations and telling stories while teaching.

Apparently, the Magi were the only group who received the higher education. The Magi perhaps were educated in the different fields of knowledge, especially
in medicine, law, astronomy, and the mastery of the Zand-Avesta. The court had been the place of discussion, debates and conferences.

According to the doctrine of Zoroastrianism, physical perfection was as important as mental. "A good mind should have a healthy body to live in," led the believers to pray first for the strength of the body, then for their minds, because the latter depends on the former. This idea and the geographical position of the Iranian plateau introduced a large number of physical exercises such as: running, archery, horse-back riding, polo, throwing javelin, and throwing spears, slinging stones, lasso, chariot-racing, and swimming. The methods employed in physical development were started from observation, perfect imitation, continuous practice, activity in the field and in hunting, performing in public contests and tournaments. The child in his Square division in the Agora every day used to observe and watch the youths and the elders perform, then he started to practice under the guidance of an expert. At the age of fifteen, the child continued his physical education in the field, learning more by practicing zealously, participating with others in the group, seeking fame, and joining the public contest. Public contests were held weekly, monthly, and annually.

5Ibid., p. 21.
between the various groups at different age levels. The public contests used to play a significant role in training the youth physically as well as morally. At the close of these public contests in the several accomplishments, prizes were offered by the state, and applauded with honour by the citizens, not only to the youth, but also to the persons who instructed them when they were boys. There were tests of performance such as carrying the clothing while crossing a river without the clothing getting wet.

From the beginning of schooling, the evenings were used in preparing and teaching the child a trade or an art; a craft or a profession. The child used a part of his afternoon time in managing his bows, his javelin, and his horse, and the other part in getting mastery in a vocation. Certain historical facts show four different groups in the Old Iran: (1) judges, teachers, and counselors; (2) soldiers and warriors; (3) professional men such as astronomers, lawyers, poets, medical doctors; (4) peasants, tradesmen, and artisans. Believing that every child partly inherited his parents' ability, they usually trained him in his father's profession. Among these professions, making weapons, cultivating land, and planting trees were taught by doing, which provided further opportunity for the child to develop his skill.

Character building, human relations and moral training were stressed in the teaching of Zoroastria.
Truthfulness, justice, purity, gratitude, piety, and courage were impressed indirectly through a well prepared environment. The principles of the good qualities were simplified in the three practical statements: Be clean in thought; be clean in word; be clean in action. The boys attending the Agora passed their time in learning justice; and it is said that they went for this purpose just as we go to learn to read. In the morning, the presidents in the boys' square at the Agora spent most of their time dispensing justice among the boys. The teacher used instances occurring in his group. Xenophon in the case of Cyrus, when he wanted to stay with his grandfather, Astyages, expresses:

His mother is then reported to have said, "But how, child, will you be instructed here in the knowledge of justice when your masters are there?" "Oh mother," said Cyrus, "I understand that accurately already." "How do you know that?" said Madame. "Because my teachers," said he, "appointed me to give judgment to others, as being very exact in the knowledge of justice myself." "But yet," added he, "for not having decided rightly, on one case, I received some stripes. The case was this: A bigger boy, who had a little coat, taking the coat off a little boy, that had a larger one, put on him his own coat, and put on himself the little boy's coat. I therefore, giving judgment between them, decided that it was best that each should keep the coat that best fitted him. Upon this, the master beat me, telling me that when I should be constituted judge of what is fitted best, I might determine in this manner; but that when I was to judge whose the coat was, I must consider what just possession is; whether he that took a thing by force should have it, or he who made it or purchased
The boys at the public schools were taught self-control and temperance with respect to eating and drinking. The things most to be desired in children were a never failing courage and high moral rectitude. It was considered a lasting disgrace and shame to tell a falsehood or to make an error in judgment. The methods which were employed in building up these qualities were: following the elder's actions; living with youth and eating with their masters not their mother; forming correct habits through repeating the essentials of life daily, respecting elders and obeying the rules; taking daily lessons in virtue and being responsible for practicing them; listening to the virtuous examples and giving reason for what they did; and acquiring reasons from others when they had to give their opinion in judgment. In case of failure to be just there was punishment.

In summary, the predominant aim of the Old Iranian education was practical rather than scholastic. Both the narrow and the broad problems of methods were a product of the realistic teaching of Zorathustra. The narrow problem

of teaching method was characterized by activity rather than reflection, example rather than precept, stories rather than lecturing, analyzing current and past events rather than verbal teaching. Singing in religious teaching, apprenticeship and making in vocational training, continuous daily organized practice, field exercises, hunting participation, public contests, and offering reward in physical education were employed as teaching methods. The broad problem of method would be characterized by at least an intimate and sometimes a devoted relation between disciples and masters, a respect for elders and loyalty to the rulers. In the human relations environment and the lessons in virtue provided rectitude and a never failing courage, truth, and in general, a high moral performance.
CHAPTER IV

GRAECO-ROMAN CONTRIBUTIONS TO EDUCATIONAL METHODS

The contributions of Greeks to the educational methods on the basis of the philosophical speculation, psychological interpretation and the logical order of both pre-Socrates and post Socrates are discussed. The specific contributions of Greek ancient educators from Socrates to Isocrates also indicated. The Roman's contributions briefly, on the basis of their philosophy are given. These contributions are discussed both in terms of the narrow and the broad problem of method of education.

I. GREEK CONTRIBUTIONS

Due to geographical conditions, Greek Society developed from a primitive stage of civilization into tribes and city states. The ideal of education was different in each state. In Sparta, an authoritarian state, the aim of education was toward the "man of action," the loyal soldier and obedient citizen. Primarily, plays, dances, and daily exercises were the methods of physical training. Emulation and competition were their training motives. Fear of elders and public disapproval,
punishment, commands and regulations were the methods of controlling the child, a blind follower, from his birth to his death. Discussion and listening to elders at the table, as well as participation in the affairs of the state were employed in teaching the child civics. For failing in activities and for moral delinquencies, corporal punishment was inflicted. Every grown citizen was expected to punish children and act as an inspector.

D. Russell has explained the Spartan training thus:

That the maidens should harden their bodies with exercise of running, wrestling, throwing the bar, and casting the dart, to the end that the fruit wherewith they might be afterwards conceived, taking nourishment of a strong and lusty body, should shoot out and spread the better, and that they by gathering strength, thus by exercises, should more easily bear with pains of child bearing...and though the maidens did show themselves thus naked openly, yet was there no dishonesty seen nor offered, but all this sport was full of play and toys, without any youthful part or wantonness.

In early Athenian Society, before the rise of philosophy, the aim of education was individual excellence for public usefulness. Individual excellence involved a complete development of mind and body. Running and leaping were methods used to develop muscles. Discus and javelin throwing were practiced to develop the arms and eyes. Wrestling was engaged in to coordinate the body and control

---

the youth's temper. Mental exercises opened usually with patriotic and religious songs. After singing, there were lessons on the lute and instruction in letters and playing. The methods of teaching of this period were not any more advanced than those of the Orient. Performing for physical development, copying dictation in writing, memorizing and reciting in reading were the chief methods. The broad problem of education was concerned with bringing the child as soon as possible in contact with life. Through family practice, example and precept, a child was inspired with reverence for his elders. In order to fill the child's imagination with pictures of heroic deeds, stories, of which there was an abundant supply, expressed in the poetic language of Homer and later poets, were used. The child in Athens as in Sparta learned his civics through attendance at places where civic activities were going on. There were examinations for testing physical and civic capacities and skill. Corporal punishment and rigid discipline were always present. As stated by Davidson:

Leaving home at day-break, and with almost no clothing, the boys, each accompanied by his pedagogue, assembled at some appointed spot, and thence walked through the streets, in rank and file, to school. The pedagogue usually an aged and worn out slave, though not expected to import to his word any literary instruction, nevertheless played a great part in his education, being his guardian and monitor during the whole of time that he was not immediately under the eye of his parents and teachers—that is, while he was on his way to and from school and during his hours of recreation and play, which
were not short. Moral training depended in large degrees upon the character of his pedagogues.  

Pre-Socratic philosopher's contribution to the educational methods. Up to this stage of civilization, the Greeks, like the rest of mankind were held together by blood ties, maintained by religious rites having their origin in these ties. In so far as a moral personality can be said to exist, it was the Community— the family or the tribes and not the individual— who had a recognized existence. The individual existed only as a member of the Community.

While the East continued developing the foregoing stages of its civilization toward mostly a religious culture, the Greeks, continued their development toward a purely intellectual culture. This intellectual thinking started with Thales of Miletus. He and two of his successors, Anaximander and Anaximenes (respectively in 6th and 5th centuries B.C.) observed the changes of nature and interpreted the causes of the changes in nature. Their methods of research started with observation, experimentation and ended with reasoning. Through observation in nature, Thales came to the conclusion that water was the "principle element." It was considered the original substance from which all others were produced. Anaximander,

through the same crude scientific method, agreed to an infinite, eternal and ageless substance. Anaximenes, full of a scientific curiosity, regarded air as the fundamental substance. Pythagoras, about 532 B.C., fond of reasoning, began mathematics. Empedocles, through observation and analytic approach of inquiry, suggested four elements; water, air, earth, and fire, as the main substances. Parmenides, through reasoning claimed that "nothing changes." Anaxagoras, born about 500 B.C., carried on scientific, rationalist tradition of Ionia. He was the first to suggest mind as the primary cause of physical changes. In science, he had great merit. He was the first who, by reasoning, explained that the moon shines because of reflected light. Leucippus, living about 400 B.C., and Democritus, about 432 B.C., developed a theory which harmonized with sense-perception. Through experience and reasoning, they discovered the distinction between matter and space. Consequently, the attitude of all pre-Socratic philosophers in the main, was genuinely scientific, as well as imaginative. The statements that everything was made of water, or air or atom would be regarded as a scientific hypothesis. They tried to test empirically. Their sciences and philosophies were all crude, but they established both thought and systematic observation, which contributed to the method of learning.
Later Athenian contribution to educational methods. The greatness of Athens began at the time of the honorable defense against two Persian attacks (490 B.C. and 480-79 B.C.). After the successful repulse of these attacks, Athens became the center of a democracy. Athenian democracy was in some respects more democratic than any of the other city states. Ordinary citizens were executive officers and judges. A large number of judges were used to hear one single case. For example, in the case of Socrates, there were 556 judges. The prosecutor and accused appeared in person, not through professional lawyers. Naturally, success or failure depended largely on oratorical skill. Citizens were greatly enthusiastic about being an official or being elected as a member of some political body. Election also was based mostly on the power of speech. These conditions, including an interest in philosophical discussions, brought about the Sophists and made the preparation for personal advancement the goal of education. Sophists, after systematic practices in teaching the best art through which oratory was developed, contributed lecturing to the educational methods. They also contributed to the theory of knowledge.

Lecturers through teaching oratory, actually, were convincing the youth that "man is the measure of all things, of things that are -- that they are, and of things that are
not -- that they are not." This was based upon "deceitfulness" of the senses and differing conditions of man as well as individual differences. In this very fact there was no truth by virtue of which it could be proven that one was right and the other wrong. As a result it brought about a tendency toward undisciplined individualism. On the other hand, Pythagoras introduced a tendency toward disciplined socialism.

Socrates (439-399 B.C.), with an earnest eye was watching the movements of his time; and concluded that they must both be wrong in principles. Socrates, therefore, examined the Sophist's principle that "man is the measure of all things seen and unseen" and agreed with the Sophist on this point, only if they could define "the nature of man." He saw that if he could establish the truth of these postulates, he might fairly conclude that the measure of all things is not the individual, as such, but the individual in so far as he shares in the common intelligence, which is the true subject of all truth. As the answer of the problem was not to be found in the individual's intelligence, he went about the world, testing the intelligence of others and endeavoring to discover what intelligence was. The content of which, he said, would be truth and the true social bond. He was not a school teacher nor was he interested in subject-matter. He was concerned with character-building and morals.
Because of this he concentrated on the broad problem of methods of teaching in his dialogue.

Through a series of systematic conversations, he practiced and developed his famous method, subsequently called dialectic; that is, to say the method of seeking knowledge by question and answer. Socrates belonged to the age of the ambiguity of definition and wrong concepts. His method consisted in taking any concept and developing it in this manner; for instance, "what is justice?" as it lay in the individual mind. Then, by a process of induction, he showed the limitations of the concept with its contradictions. Then, by removing these limitations and developing the true concept, he arrived at the definition that would best satisfy the proper usage. Through this method, he concluded that men think differently and as a result they think imperfectly, superficially, and one-sidedly and do not see the full meaning of their own thoughts. Believing in the entity of all complete thoughts, he endeavored to make a list of complete thoughts which bore more directly upon moral life; such as, courage, temperance, worth, and friendship, and showed their interconnection. Therefore he showed that they presented themselves as an ordered system of universal truth, which might be made the basis of a new social order and the material of a new education.

An analysis of Socrates's dialogues written by
Plato indicate that he masterfully directed sequential questions to induce thought. Examples of his works may be found in his Apology, Meno, Phaedo and others. These questions were a promotion of logical consistency. Socrates dialectics included the following steps:

1. Seeing the problem by Socrates.
2. Asking leading questions until the hearer saw the ambiguity of the problem.
3. Becoming skeptical, the hearer understood his contradictory reasoning, then Socrates guided the hearer into the right path.
4. Insisting on questioning the problem through until the right concept was formed in the mind of the hearer. The first three steps have been called "irony" and the last step the operation of midwife creativeness.

There were three fundamental premises on which Socrates built his method. (1) Socrates had a great respect for the individual's abilities, and usually started with the individual's insight; (2) Socrates always stimulated individual by short, appropriate examples taken from real life situations; (3) Socrates used a logical order in his conversation, going from particular to general, from concrete to abstract and from ambiguous definitions to a refined implication. The following quotation by Bertrand Russell, explains the Socratic method:
The method is in harmony with the doctrine of reminiscence, according to which we learn by remembering what we knew in a former existence. As against this view, consider the discovery that has been made by means of microscope, say the spread of diseases by bacteria; it can hardly be maintained that such knowledge can be elicited from a previously ignorant person by the method of question and answer.\(^3\)

The dialectic method played a great part in all subsequent education, philosophy, religion and politics. The dialectic method would be suitable for some questions, and unsuitable for others. As a means of revealing the laws of thought and exposing the fallacies of the Sophists reasoning, it did admirable service. The dialectic method paved the way for the science of logic and contributed studies both in Plato's Academy and Aristotle's lyceum.

Plato (427-347 B.C.) in his life of contemplation on human nature, philosophically discovered a sharp distinction between mind and matter. Psychologically, he agreed that there were three main parts in man; the first was reason residing in the head; the second was courage residing in the chest, the third was senses and appetite residing in the abdomen. He looked upon these powers and thus employed a mode of thought similar to that which was later to be called faculty psychology. These principles led him to the recognition of individual differences and an understanding of the child's potentialities, its

---

\(^3\)Russell, op. cit., p. 93.
endowment through heredity and environment. This recognition of individual differences was stated by Edna Heidbreder as follows:

Plato also recognized individual differences among men. In the ideal state, the Republic, men were to be chosen for their several duties with reference to their abilities. Those endowed with superior reason were to be rulers; those endowed with courage, warriors, the rest of mankind were to be artisans, tradesmen, laborers, and slaves—necessary to the state, but lower in rank than warriors and state men, as the aptitudes and sense are lower than courage and reason.

The section on education in the Republic was based upon this principle, and his methods of bringing up the children of its community was based upon the children's potentialities and the organization of the community.

Plato believed that childish potentialities must be encouraged to pattern themselves upon the model of the community. In other words, civic efficiency could be instilled in every child. Being a child, he recognized, involved certain urges, drives, and needs for movement and love of play. These needs were the motives for the child to make his way toward personal maturity. These needs, according to Plato, were the starting points of learning. The next step of learning would be provision of a suitable environment, such as a community playground, for the

---

learning activities. In the community playground the children would play spontaneously. They would play for they have a love of play. They would set up the games. They would manipulate the sand and construct something similar to their own physical environment. They would run, skip, jump and as a result they would develop themselves physically. As they grow they would organize and administer their games and leadership would evolve.

The third step of learning would be protection or avoidance. Plato believed that the child must not be trained or drilled or ordered to learn and amuse itself, but there should be community matrons and nurses, community fathers, and community mothers who would supervise and protect the child as long as it needed this attention. The child, in expressing his abilities, interests, and capabilities, through activities, would be assisted by the community mothers and nurses as explained in the Republic or by the community matrons as stated in the "laws." They would stimulate the child by telling authorized stories. They would protect the child from bad company and wrong behavior.

With reference to the groups of warriors, he drew a parallel between young soldiers and the potter's son. He pointed out that the potter's son learned to be a potter by close observation and conscious imitation of his father or master. The group of young soldiers were to observe,
act in the community field and imitate the community fathers even on the real battle fields. Again in the case of the warrior, the same three steps in the method of education are noted by Plato. Psychologically, the group of soldiers would have certain abilities and would be superior to others in courage. This characteristic was considered as a motive for learning. This motivation which came from the child's insight, urges, and drives would stimulate him to act in a certain direction, for instance, fighting activities in the community fields. Military sports, such as horse-back riding, archery, hurling the javelin, slinging the shot, and managing heavy arms would be engaged in by the youth.

The third step of learning which was the step of protection would take place by the highest magistrates of the city as in the case of the groups of warriors. The child would be protected from the crude performance and dangerous situations.

The training in writing of the child would start with his own name through his own interest. This would be the motive for writing. Then he would compare his written name with the name of another. Under instruction by the community supervisor, the child would acquire gradually, a more systematic and logical grasp of the significance of syllables and letters and grammar and language.
*Meno* would be the best example of Plato's method of acquiring higher education. The method involves the following steps: (1) recognition of the problem or understanding of the learning situation; (2) the breaking down of the problem into parts; (in the case of *Meno*, Socrates turned the complexity of the problem into simple units such as drawing lines, connecting lines, and painting to the relevant parts of the diagram); (3) motivation; (4) solution of the problem. Motivation would make the problem *Meno's* problem and as a result, *Meno* projects himself into the solution of the problem and he would consequently learn by teaching himself to become a mathematician.

Without doubt a developed form of Socrates's dialectic methods and method of reasoning were employed in Plato's *Academy*.

Concerning the broad problem of methods of education, Plato believed that the community encouraged the children of school age to adapt to the community pattern. He believed that in participating in community festivals the child developed community spirit, and *community boys become community men*. In the community festivals as well as in the community playground, the children would move, speak, and think, would express themselves and would be impressed by one another and by the community as a whole. As a result, they would grow more and more in accordance
with the approved community patterns and would become a community citizen. Plato believed that social fashion completely overpowers the child's half-developed critical sense. The community ideas would influence his ideas. The community problem would be taken as his problem and the community ways as his ways. In this manner he necessarily would develop for himself mentally and personally. Instead of thinking in terms of a few known names, he would think in terms of the generality of fellow citizens.

Consequently, the child through his provision of community matrons would become a citizen who would respect the adult community; would try always to be one of them, would speak as they do, would act as they act, would dress as they dress, and think as they think, would be docile and obedient to matrons, community leaders and adults.

Aristotle (336-322 B.C.), was really in agreement with Socrates's dialectic method. However, he systematized and completed Socrates's method. Aristotle's philosophy found no distinction between mind and matter; yet, Plato his teacher, made this distinction. It seems to him that mind and matter were interrelated and neither existed apart from the other. This doctrine led Aristotle to be interested in the concrete and actual significance of senses whereas Plato was not. Considering the facts, Socrates, more than his predecessors, developed the rule
of concrete experience in teaching-learning methods. He improved the inductive method as well as the deductive and emphasised the need of observation and experimentation. Aristotle, himself, made hundreds of observations both of animals and plants. Aristotle devoted considerable attention to the question of how do we know the first premise from which deduction must start. This would be considered as a hypothesis in the modern scientific terminology. This shows that Aristotle should hold the highest place in the ancient history of teaching-learning methods.

Plato, in his Academy, employed deduction and made this process of thinking questionable to Aristotle, who then completed the right method of reasoning in his Organum.

Psychologically, Aristotle dealt with how learning took place. His specific contribution was his discussion of memory, and particularly, the principles of association. He originated the following laws of association: association by contrast, by similarity and by contiguity in time and place. As stated by Heiderer:

In addition to his treatment of psychological processes in the general scheme of things, Aristotle made a specific contribution to psychological theory in his discussion of memory, particularly in his famous statement of the principles of association. These principles—association by contrast, by similarity, and by contiguity in time and space—were given as empirical rules. In the apparently fortuitous way in which ideas
present themselves, Aristotle saw not chance but law.5

This single fact shows how Aristotle was aware of principles of methods; philosophical, psychological, and logical. Aristotle most probably failed in means of method. This probably was one of the main causes of failure of the Middle Ages in using his ideas.

Consequently, the contribution of Isocrates,* the great teacher of antiquity, to the educational methods which be noted. The objectives of education, according to Isocrates, aimed at the development of the mind for the deliberation of one's own affairs, the affairs of the society, as well as those of the state, and finally for the development of the body for the service of the mind. Physical training for the body was secured through gymnastics and for the mind through philosophy.** Isocrates

Ibid., pp. 32-33.

*Isocrates was born in the age of Pericles. He was influenced by both the Teaching of Socrates and the Sophists. Two main works are attributed to Isocrates: Speech Against Sophist and Antidosis. In the latter an application of his theory is given. He devoted his life to teaching. The proof for this fact would be the school of rhetoric which he opened at Athens in 339 B.C., when he was 44 years old and which he still maintained with the help of his pupils.

**Philosophy, according to Isocrates would be the servant of rhetoric; rhetoric with him was broad and a form of education. It was this insistence of the value of general education, secured through rhetoric which made Isocrates the successor of the Sophists.
believed that these were the twin arts parallel and complementary by which their masters would prepare the mind to become more intelligent and face consciously the current problems of life. He was not concerned with knowledge of the future but thought the best one could do was the study and infer what was going to happen.

In guiding the pupils to the accomplishment of his educational objectives, Isocrates was concerned with the nature of man. He believed in natural endowment as the principle of becoming wise while he was of the opinion that some improvement would be possible for every one.

From this idea, one can see that Isocrates came to the recognition of the natural potentialities of man and the observation of the differences between the abilities of the different individuals as well as the importance of training and practice. Isocrates established his methods of teaching on the basis of the recognition of individualization.

On the basis of the awareness of individual differences, he taught no more than two students at a time and instructed them individually. He believed that learning and practice were indispensable; that aptitudes were fundamental in learning and that the teacher must be determined to preserve them throughout the training period. These bases are well stated in the following quotation of his book translated into English by George Boring:

...
But I think that you will get a still clearer idea of its powers if I tell you what professions I make to those who want to become my pupils. I say to them that if they are to excel in oratory or in managing affairs or in any line of work, they must, first of all, have a natural aptitude for that which they have elected to do; secondly, they must submit to training and master the knowledge of their particular subject, whatever it may be in each case; and, finally, they must become versed and practised in the use and application of their art; for only on these conditions can they become fully competent and pre-eminent in any line of endeavor. In this process, master and pupil each has his place; no one but the pupil can furnish the necessary capacity; no one but the master, the ability to impart knowledge; while both have a part in the exercises of practical application: for the master must painstakingly direct his pupil, and the latter must rigidly follow the master's instruction. *6

Isocrates used the same method in all styles of prose composition. He believed that getting mastery in prose composition would be considered similar to a gymnastic exercise for which the gymnastic teacher would begin by various thrusts and parries which later developed into an elaborate system of attack and defense. Isocrates, unlike the Sophists, never lectured to large audiences. He believed in the effectiveness of individual teaching and he practiced that. Isocrates pointed out that the teacher's determination would not be based upon petty subjects or cases in the court of law, but upon practicing and writing about

---

great national issues and topics of large human interests. He taught his pupils through practice in writing. Isocrates' own writing such as Cyriacus, Philippus, Platoicus, Archi-
ticus, on The Peace and Areopagiicus would be the best illustration.

Isocrates brought to attention the importance of language and the significance of speech, not only as a social communications but also as a means of learning. Isocrates believed that the power of speech would cause investigation of the unknown, through debate and would bring understanding through using the right word in the right place. Isocrates believed that oratory guides man's thought and action and that men of great intelligence had made the greatest use of it. In this way he connected oratory with præstability and classed it as a means of learning.

...and, generally speaking, there is no institution devised by man which the power of speech has not helped us to establish.... Through this we educate the ignorant and appraise the wise; for the power to speak well is taken as the surest index of a sound understanding, and discourse which is true and lawful and just is the outward image of a good faithful soul.7

In this way, it was learned how Isocrates has been aware of the importance of the relationship between the teacher and the learner; the hearer and the listener; the speaker and

7Ibid., p. 237.
the audience. His practice on individual teaching, his idea on training as a modifier of behaviors, and his understanding of natural aptitude make him an outstanding teacher of ancient times and an impressive contributor to modern time.

II. THE CONTRIBUTION OF ROME TO EDUCATIONAL METHODS

However, imperialism in Rome brought about a sound organization both in terms of social and educational institution. After the conquest of Greece totalitarianism availed her to get deep intellectual and reflective thinking. Although schools were set up first by Greeks and later by the state in Rome, the contributions of Rome to the educational methods was not very significant and even did not touch the Greek ideas and practices.

Methods in education remained direct imitation, memorization, and repetition accomplished by drill and punishment. In the higher education the lecture method was used as well as oratory, debate, analysis and discussion developed as the result of social and political demand. Wilde, in taking the method of analyses of the Romans as their main contribution to educational methods, explains thus:

The secondary level, the method was largely one of drill in good literary and moral habits. There was usually intensive drill on parts of speech, syntax, inflections, and other grammatical elements. There were elaborate
exercises in paragraphing, composition and verse-writing. A favorite method was for the teacher to dictate a quotation from some writer, to be taken down verbatim and used by the pupil as the basis of an elaborate theme, which was organized according to the following outline: (1) a panegyric on the author, (2) an expansion of the thought, (3) an explanation and defense of the principle underlying thought, (4) a comparison of the thought with similar ideas of other authors, (5) a collection of confirmatory quotations or incidents, and (6) a statement of the moral lessons to be drawn from the passage, and a practical exhortation.

The broad problem of method of education in Rome was the outcome and the contribution of the main agencies in Rome, that was the family. The child formed habits while attending his father in the forum, the camp, in the field and by participating in his work as well as daily work. Through this participation a Roman child acquired the Roman virtues. By imitating his father, a Roman child learned the pattern of the Roman society and became a good worker or a good soldier or a good citizen.

In Rome, as in other nations, there were great teachers. Quintilian, the great Roman teacher on the basis of the principle of acceptance, accepted the child and practiced the method of individualization. He took into consideration the importance of interest and motivation and the significance of a friendly discipline. Quintilian recognized that pupils were not all alike and different

---

methods were appropriated for different natures as Brubacher explains it:

Much of Quintilian's great success as a teacher arose from his recognition that boys were not all alike and that different methods were appropriate for different natures. Jewish teachers had vividly described four types of students resulting from their emphasis on memoriter—the sponge, the funnel, the sieve, and the winnower. Yet, so far as appears from the record, they had not varied their methods accordingly. Quintilian was more inclined to distinguish between students on the basis of the quickness with which they learned. Some, he recognized, learned through steady and continued application to their studies and others through rapid and intense concentration.9

Due to the lack of teachers and a suitable condition, the principles of methodical treatment of Quintilian neither developed nor was practiced till modern time.

CHAPTER V

CHRISTIAN CONTRIBUTIONS TO EDUCATIONAL METHODS

A comparison of the method of teaching of Christ to that of the modern outstanding educators of the present time is discussed in this chapter. On the basis of the Christian philosophy the contributions of early Christians, monasticism, medievalism, chivalry and the guild are evaluated. The factors influencing retardation of the progress of the educational methodology are interpreted.

I. CHRIST'S CONTRIBUTIONS

Christ as a great teacher. Outstanding contemporary educators are in agreement that learning which involves the whole child is based upon the principles of motivation, apperception, interests, insights, observations and activities, and classification and generalization. In other words, the laws of learning and the importance of the learner's mind-set respectively, have been emphasized by psychologists and educators, through the stimulus-response theory and needs-press theory.

Psychologists, in the light of careful studies on organisms, point out that in any given situation the child responds not singly but variously, variously to
the different parts of the situation. What is learned by these various responses is called "simultaneous learning." These various responses are tied together and they must be considered together in teaching.

In the half hour when a boy is failing his grammar lesson, he is not only learning or failing to learn that specific lesson, but he is also fixing or unfixing an attitude toward the subject of grammar, another attitude toward his teacher, another toward schools, another toward himself with reference to grammar and school and his ability and disposition generally. He may be getting interesting suggestions for further study into language when a favorable moment shall present itself, or he may be hardening his heart on the whole matter. He may be saying "It's no use, I can't learn anything." He may be deciding that school and parents and the whole tribe of governors are unfeeling tyrants, that wrong to them is right to him, that right to him is success in getting by with his unbridled impulses. These are some of the heads under which this boy has been learning during his half hour of grammar study.¹

These factors stress the theory that learning involves the whole organism: physical, emotional, and mental. This theory emphasizes that learning is not all mental. It is in terms of specific behavior, and, as a result, teaching should be in terms of modifications of behavior.

Taking into consideration these advanced theories and analyzing the contributions which Christ made to educational methods, one can see that Christ preceded

their thinking many centuries when he taught to change
the character and reshape the personality of individuals.
He believed that external behavior would be modified as
inner character was developed.

Since the promotion of the personality of mankind
was his specific aim, he naturally accepted the whole
individual, respected his nature, and made him the center
of his teaching. Understanding the fact that the problem
of man's life neither would be solved in light of the mind,
nor by the help of the strong muscles, he stressed that
learning, which to him meant the modification of behavior
with particular emphasis on man's relation to his fellow
men, was based upon the heart. That is, Christ emphasized
that learning takes place in terms of the whole individual,
physically, emotionally, and mentally.

 Aware of the fact that teaching is a twofold process
that involves proper relationship between pupils and teach-
ers and that the effectiveness of teaching is largely
founded on the effectiveness of that relationship, he not
only based his method of teaching on the principles of
accepting the whole picture of the individual and respect-
ing his potentialities but also stressed the principle of
love as the best doctrine of discipline.

 Concerning the principle of apperception, the his-
torical facts of the methods of the teaching of Christ
indicate that Christ taught different groups in different
ways. In other words he began with his pupils at the point at which he found them and built upon the basis of their previous experiences. For instance, his treatment of the woman of Samaria was different from that of the young ruler. His approach was always determined by the nature of the occasion, by the status of his hearers, and by the needs, interests, and insights of his pupils. Starting with his pupils needs and interests, Christ was aware of the principle of motivation. Therefore, while he was teaching, through a variety of understandable examples, similes, metaphors and parables, he not only made his teaching interesting but he also made the lesson enjoyable. For instance, an analysis of one of his parables exemplifies teaching by example and applying motivation as it should be done. In Mark, Chapter 4, Christ employs the parable of the Sower to illustrate the way his teaching would be accepted. It will be noted that in this and all his parables the illustration and examples are taken from the actual life of his learners. In his day it was common for men planting their fields to scatter the seeds by hand. The sower did not expect all seeds to germinate, grow and bring forth fruit. Always some were eaten by the birds. Others could not grow because spots of earth lacked fertility and moisture to sustain them.

2Bible, Mark iv, 3-8.
But always there were a few that fell on soil that could provide sustenance necessary for growth of the plant and the development of fruit. It is significant that every element of this parable was used for effective teaching and was drawn from the experience of his pupils. The effective teacher of today recognizes the necessity of relating his subject matter to previous experiences, interests, and readiness of his students.

Concerning the importance of learning through the senses, Christ advocated that the circle of learning would be completed by reflective thinking. For example, the significance of sight and hearing was obvious to him. He knew that these two would result in useful knowledge only when seeing was turned into looking and hearing into listening. This means that Christ indirectly stressed the importance of attention in learning.

Christ's whole teaching rested on the fact that he practiced his own teachings and lived in terms of the principles of his teaching. In other words he taught through his actions and examples and stressed that intelligent behavior was based upon daily practice. Therefore, he expected his followers to be practical and his pupils to carry on this doctrine of action.

Although it is said that Herbert (1776-1841) systematized the psychological principles of teaching-learning, it seems obvious that many great teachers previously
had been aware of the psychological basis of teaching. Confucius in China, Buddha in India, Socrates in Greece, Christ in Jerusalem, Zoroastor in Persia, and Quintilian in Rome would be good examples of this fact. Although Christ did not write either his educational theory or his psychological basis of education, his teaching was certainly based on a psychological foundation.

II. THE CONTRIBUTIONS OF EARLY CHRISTIANITY UP TO MEDIEVAL AGES

Generally speaking, the Christian system of education of this period was characterized by religious bias, and essentialistic system of philosophy, a narrow knowledge of biology and a weak understanding of psychology.

From this it followed that proper education should be narrow in concept and concerned with mind development. Mind development was considered as being at the transcendental level and was one of the true aims of education. This aim of education forgot the importance of physical behavior and its correlation to the mind and emotion.

The narrow aim of education involves a narrow and fixed curriculum which stood as the center of educational organization.

Following this principle, the school was taken away from the community. What was taught in school had no value in life and if it had, pupils were not accustomed to take
advantage of their knowledge. As the body was a handicap to the mind and as the senses are erroneous, there was no need for biological science in teaching.

Faculty psychology was emphasized in learning and as a result in teaching the body was discounted and the mind would be developed. The mind was considered as a storehouse and subject matter was to be placed in it. For example, memory was to be developed by repetition and should be filled up from the content of books by exercises and drill. In handling children reading would be accomplished by repeating and writing by drill. Learning did not go beyond memorization except for occasional understandings. The narrow aim of education which was set up previously concerning subject matter fixed toward a common goal, that is, mind-development, would result in effort, rigid discipline, and punishment. It would forget child interest, readiness, and satisfaction. Believing in the same potential qualities of intellect for all people, the pupils, boys and girls, young and old were merely treated alike. Fear of elders, sometimes of God, made this treatment possible. Punishment was the only means used to make children obedient and docile and cause them to master their school work. Whether the child lived in urban or rural areas, whether he was in the field or at school, whether he was in a factory or at home, whether he was at play or at work as an apprentice, he possessed that innate potential ability
that demanded similarities of treatment.

Some of the teachers in this period, discovered their own ways to meet situations after months and even years of blundering. Perhaps the ways discovered were only mediocre ways, but their true goal was being achieved.

Learning was a task to the child and under compulsion he was forced to give himself to it. External pressure instead of internal motive made him work. Even though it was psychologically impossible, he was called upon to act without interest and readiness. The similar type of education transferred to the United States and carried on during the Colonial Period as stated by Trumbull:

He tries with ease and unconcern
To teach what ne'er himself could learn.
Gives law and punishment alone,
Judge, jury, bailiff, all in one,
Holds all good learning must depend
Upon his rod's extremist end.
Whose great electric virtue's such
Each gains brightness at the touch
With threats and blows, excitement pressing,
Drives on his lads to learn each lesson;
Thinks flogging cures all moral ills,
And breaks their heads to break their wills. 3

The educational methods of the early Christians were an outcome of their society and the facilities which were available. Due to the lack of publications and a sound

organization, as well as the lack of an outstanding teacher such as Christ himself, the early Christians failed to continue the effective teaching of Christ.

As Christianity was in its infancy and limited to a certain area as well as to a limited number of people, an opportunity was present for the development of the method of conversation known as the catechetical method. There were few books or teachers held in high esteem as messengers of Christ. These conditions made possible the development of methods of exposition, exhortation and sincere guidance.

However the Christian philosophy influenced the education of Monasticism, Chivalry, and Guild but the methods which were employed for training knights and educating monks were realistic. Usually, however, the monastic school offered little new in methods. Chivalry and the guild system also had nothing new to contribute; as stated by Brubacher:

The training of both monks and knights was thoroughly realistic. Each was an apprenticeship in doing. The young page or squire for instance, learned the accomplishments of a knight at a castle, where he became a kind of attendant to the lord of the castle. There under his surveillance and that of his lady the candidate for knighthood learned horsemanship and the use of arms as well as the knightly code and polite manners. Similarly, the monk learned his religious duties, often together with some craft like forming or
copying manuscripts, from older, more experienced brothers, all under the supervision of the abbot.4

From this it drives that their methods were quite similar to the pre-christian monasteries of Indian societies discussed previously. The methods of contemplation, intuition, meditation, and self-inspection were employed in the monasteries during the medieval period.

Centuries to come, with the expansion of the doctrine of Christianity, the Christians came in contact with different ideologies. Christian scholars decide to defend their doctrines against the strong opponents, they tried to rationalize the doctrine of Christianity. Due to the fact that most of the religious propositions would not be discussed inductively; or perhaps due to the strong faith and belief in the authority of the church, the propositions and the classic statements accepted as true major premises and used syllogistic reasoning in proving the middle term, as well as approaching a conclusion. Because of the religious indoctrination, scholasticism limited itself to religious and intellectual thought and was tied up with the syllogism which took the trend away from real-life and scientific procedures. The subjects of argumentation, disputation and dialectic were selected from the abstracts.

The four doctors of the church Saint Ambrose, Saint Jerome, Saint Augustine and later, Pope Gregory the great, became the prime authorities. Therefore, in discussing any problem the students usually classified their ideas, compared their statement on the problem with each other, examined them from the different sides and drew a conclusion. Controversies among the leaders holding different views were long and bitter. Realists, Nominalists, Universalist, and Conceptualist had each to become skillful in argument, and it was necessary to have a complete mastery of the science of logic. Even in the most elementary of subjects, dialectical arrangement was demanded. The test or the title of the discussion with its multiplicity of divisions and subdivisions usually became completely dazed with the delicate distinctions of metaphysical thought. Without doubt all their syllogistic reasoning was based upon an adapted part of the writing of Aristotle, and it became of prime importance to harmonize the ancient philosophy with the doctrine of church.

In the universities due to the lack of textbooks, the teacher employed the methods of dictating and lecturing which were the contributions of Greeks and Hebrews.

Concerning the broad problem of the educational methods of the Christian system of education, one can see that the dignity of man imposes upon him the duty of consideration of the human soul as an end in itself and an
idea of charity which is comparable to that of the dignity of man and ends in respect for man. Dignity of man rests on the fact that he has a soul. These ideas have drawn men together and have laid the foundation of respecting individuals as they are. The methods which Christ employed and expected his followers to practice were based upon the principle of love for the worth of human beings. This principle not only eliminates the habituation of individual obedience, but also guides a mild discipline and developing one's self from egotistic stage of life into altruistic level, from immaturity to maturity and from unconscious behaviors to conscious behaviors.

Due to the influence of the authority of Rome, known as imperialism, due to the centralization of the authority at the church, due to the development of Feudalism and consequently, due to rise of the authoritarian type of nationalistic government, the above mentioned method of treating individual was changed into method of rules of feudal lords and leaders, order of home and master, commands of knights and dukes, fear of church and God, as well as punishment and hard discipline of teachers in treating children.
CHAPTER VI

ISLAMIC CONTRIBUTIONS TO EDUCATIONAL METHODS

This chapter specifically explains the Quranic methods that will help in learning. The development of the scientific method on the Quranic basis aided by assimilating the best of the past culture of man is discussed. Elementary methods of teaching as well as the methods of teaching specific fields like chemistry is indicated. Consequently, the broad problem of method as a means of reshaping the character of man in explained.

I. CONTRIBUTIONS TO THE HIGHER EDUCATIONAL METHODS

Knowledge is an essential of faith for every Moslem. Superiority of a person over another is based primarily on virtue and knowledge. Quran as it is, invites every human being to learn, and Mohammed made knowledge necessary to every male or female. He also encourages the Moslem in seeking knowledge though it be available in China. There are many verses in Quran on the significance of knowledge on the superiority of the learned and on the importance of learning for faith and daily life.

"There is a sign in it for a people who reflect, who ponder, who are mindful, who are men of understanding,
and use their intellect.1 This stage of personality in Islam is based upon learning. A learning which includes the whole nature of man.

"Allah is He who Created the heavens and the earth and sent down water from the clouds, then brought forth with its fruits a sustenance for you, and He has made the ships subservient to you, that they might run their course in the sea by His command, and He has made the rivers subservient to you. And He has made subservient to you the sun and the moon pursuing their courses, and He has made subservient to you the night and the day. And He gives you of all that you ask Him; and if you count Allah's favours you will not be able to number them; most surely man is very unjust, very ungrateful.2

"And He has made subservient for you the night and the day and the sun and the moon, and the stars are made subservient by His Commandment; most surely there are signs in this for a people who ponder; and what He has created in the earth of varied hues; most surely there is a sign in this for a people who are mindful. And He is who has made the sea subservient that you may eat fresh flesh from it and bring forth from it ornament which you might seek of His bounty and that you may give thanks. And He has cast great mountains in the earth lest it might be convulsed with you, and rivers and roads that you may go aright, and landmarks; and by the stars they find the right way. Is He then who creates like him who does not create? Do you not then mind?3

These verses explain how the whole nature would be useful to man and how a good knowledge of the elements and the laws of nature are necessary.

1Quran, 111.
2Ibid., xiv, 32, 33, 34.
3Ibid., xvi, 12-17.
For the same reason Mohammed gave the following injunctions:

He dieth not who takes to learning. Who ever reveres the learned reveres me; to obtain education is incumbent on every Muslim, male and female. Seek after knowledge though it be available in China. To listen to the words of the learned and to instill into others the lessons of science is better than religious excess. The ink of the scholar is more holy than the blood of the martyr. He who leaves home in search of knowledge walks in the path of Allah. Acquire knowledge. It enables the possessor to distinguish right from wrong; it lights the way to heaven; it is our friend in the desert, our society in solitude, our companion when friendless; it guides us to happiness; it sustains us in misery; it is an ornament among friends and an armour against enemies.4

This principle made the acquisition of knowledge a sacred duty with a "Muslim." Assisting this principle, the Qur'an also suggested quite a number of ways of acquiring knowledge. In other words the following methods are suggested in the Holy Book: (1) The man's attention was drawn to the art of reading and writing. In the very first revelation of Mohammed, when speaking of God, says: "Read in the name of God...who teaches men to write with the pen, who teaches him things, he knew not before."5

(2) The importance of senses were mentioned in many verses and it is pointed out that man can raise his

---


5Qur'an, op. cit., xiv, 13.
intelligence through his or her senses. (3) It is noted that one should use his past experience for the future
guidance and learning. (4) Many verses indicate the
importance of the observation of the universe. It is
noted that one should travel with an open eye observant
of the nature, the relics and the remains of those nations
that rose and fell in days gone by as it is shown in the
following verses: "Men of understanding are those who
reflect on the creation of the heaven and the earth, and
say, thou hast not created this in vain."6 These verses
also indicate the importance of reflective thinking and
they show the significance of the purpose of the universe.
(5) Case-history and biographies are two other ways that
one may learn. History is taken by the Qur'an as a field
that everyone should ponder, as it is stated: "Have they
not then journeyed in the land and seen how was the end
of those before them?"7 (6) Learning lessons from hard-
ship and trials, from Divine Revelation, contemplation
and meditation are also mentioned in Qur'an.

Four different words are used in conveying each
sort of contemplation. Each of these has a certain
meaning. It is difficult to denote the proper equivalent

6Ibid., xv, 14.
7Ibid., xlvii, 10.
words in English. An attempt at interpretation is made below. The words are: (1) "Tafagguh," (2) "Tadabbur," (3) "Tafakkur," (4) "Ta a'qul."

The first word, "Tafagguh," means to use all organs of knowledge. Chapter two, page 155-157, specifically mentions senses, both external and internal, and observation and experience as means to acquire the truth of things.

"Tadabur," the second word, means observing things and knowing the cause of their existence. As KHWAJA-KAMAL-UD-DIN explains it, "Tadabur" means to understand ins-and-outs of things that come within our cognizance.3

The third word, "Tafakkur" means constant pondering over a matter in order to reach the root of it. "Tafakkur," in the modern sense means observation and the study of nature to discover the laws of nature.

The fourth word "Ta a'qul," means not only a knowledge of the properties of things in nature, but also their use and the purpose for which they are intended to be used.

Besides these ways, many verses in "the book" stimulate, encourage, and order man to do reflective thinking, to reason, to contemplate, and to pay attention

3 Kamal-Ud-Din, op. cit., p. 86.
to nature. Also included are many attributes of God such as: (1) "Alim," meaning all-knowing, (2) "Alimu-l-ghayb," meaning one who knows hidden and unseen things, (3) "Latif," meaning one who possesses more minute insight into other things, (4) "Hakim," the word is derived from the infinitive "Hikmat" which means science and wisdom, (5) "Basir," one who with an open observant eye sees things in order to acquire knowledge and experience, (6) "Sami," means all-hearing and (7) "Khabir," means one whose source of information has no limit. Such a source possessed by man enables him to be a good citizen.

With this background the "Muslims" became acquainted with these sources of knowledge in the academy of Jundishapur.* They also became acquainted with the

*Jundishapur is located in Southwest Iran. It was built probably in the fourth century A.D., and became the center of Iranian knowledge. The great king, Khaorees Mushirwan (531-79 A.D.), known as the just, made the city the most important intellectual center of the time in which Persians and Syrians taught the basis knowledge of the previous centuries. Although the Arabs conquered Iran, the Academy of Jundishapur continued to be the scientific center of the New Islamic Empire. The same king gave refuge and entertainment to the seven neo-platonist philosophers whom the edict of Justinian had driven forth from their Athenian homes. After closing the Pagan schools in 529 A.D., the same king made it a condition of his next treaty with the Romans that they should be allowed to return thither and remain unmolested. The Neo-platonist philosophers in Jundishapur met Syrians, Persians, and Indian sages. Thus arose a scientific syncretism which later became important for the development of the Islamic thought. Khaorees sent his own physician to India in search of medical books which he translated from Sanskrit into Pahlavi, that is, Middle Persian.
Aristotelian works through Nestorians in Asia Minor. Then as a result, they developed the scientific methods of learning, invented new instruments of scientific research, and as Kanal-un-din explains, contributed the following:

(1) They renewed and improved scholastic philosophy which had been abused by Hellenic vanity and paralized by the grossness of the Romans.
(2) They systematised mathematical science.
(3) They cultivated natural and experimental knowledge to which neither the Greek nor the Romans had attached any value.

The Muslims also did great service to medical science in all its branches; and while non-Muslims went to the shrine of one saint or another to be cured of their ailments, the Muslims went to hospitals for treatment. Hospitals and asylums with capable nurses and able physicians spread everywhere in the early Muslim Empire. In Bagdad alone there were 364 licensed physicians. Hospitals for animals were also founded. Medicine and pharmacy were greatly advanced. Chemistry and algebra, astronomy and trigonometry, botany and optics were all either invented or advanced by Muslim learning. The sciences of agriculture and navigation also were greatly elaborated. The remains of the Moorish occupation in Spain today are eloquent of the wonderful system of irrigation introduced there by the Muslims. Egypt, too, in the first Muslim Century, had under cultivation an area five times as great as the present one. The cotton plant and sugar-cane were first introduced into Europe in those days. The weaving of silk and cotton, the printing of calico and the dyeing of stuffs were a few of the arts developed to a high pitch of perfection by the Arabs. They not only manufactured glass, but knew how to embellish it both within and without. Even aviation was attempted in the days of Al-Mamun, but Abu l-Casim, the first inventor of the flying machine, crashed when flying and was killed.9

9Ibid., p. 56.
The teachers usually were capable organizers. They were able to organize the subjects logically, classify and enumerate them. They had positive minds and taught the subjects in terms of their practical use. For instance, arithmetic had to serve the needs of commerce and the division of estates. The professor sat with his back to a column, or on a high stool, and around him gathered a circle of disciples. This was called the learning-circle. There were numerous learning circles which dealt with different topics. The methods of lecturing and conversation were used very often. The practicability of the method depended upon the subject which was taught. For instance, in teaching chemistry, a few words on the methods which were used by the first Chemist, Jabir, would be appropriate. He was broad in his scientific outlook and insisted upon the necessity of experiment and observation. Thus on one occasion he said:

The first essential (in Chemistry) is that thou shouldst perform practical work and conduct experiments. For he who performs not practical work nor conducts experiments will never attain to least degree of mastery. But thou, o, my son, do thou experiment so that thou mayest acquire knowledge.10

*Jabir, from an Arab family, was born in Tus of Iran in the year A.D., 749. He set up his laboratory at Kufa, in Iraq, worked at the court of Harun, in Bagdad. He was exiled in his eighties and died in 813 A.D.

In another case he made the following remark:

It must be taken as an absolutely rigorous principle that any proposition which is not supported by proofs is nothing more than an assertion which may be true or may be false. It is only when a man brings proofs of his assertion that we say "your proposition is true."

The following specimen of Jabir's methods of preparing chemical substances, indicates his scientific outlook.

The quotation is from his "Great Book of Properties" which is preserved in the British Museum and quoted in the book, 

The Great Chemists:

Take a pound of litharge, powder it well, and heat it gently with 4/6 of wine vinegar until the latter is reduced to half its original volume. Then take a pound of soda and heat it with 4/6 of fresh water until the volume of the latter is halved. Filter the two liquids until they are quite clean, and then gradually add the solution of soda to that of the litharge. A white substance is formed which settles to the bottom. Pour off the supernatant water and leave the residue to dry. It will become a salt as white as snow. 12

Jabir by his insistence upon the experimental method made many important discoveries, established chemistry as a science, and emphasized the scientific method of learning-teaching as well as thinking.


12Ibid., p. 15.
Another great exponent of scientific method was Al-Razi.* He usually used his consulting hall as his classroom. He rarely used the method of lecturing. He treated his patients by the help of his pupils and guided them in learning. He constantly made notes of significant points. His students also made notes from which to learn.

He was a man with a big head; like Casket, and he used to sit in his consulting hall surrounded by his pupils. The most advanced of these sat next to him in a circle, and in an outer circle sat the more elementary. When a patient came, he described his symptoms first to the elementary students, and if they understood the case they dealt it. If not, the man passed on to the advanced students, and if the case was too difficult for them (one wonders if this ever occurred), then Razi dealt with it in person.13

In the light of the above quotation one can see how Razi was superior in his method of teaching and how he was in favor of learning by practicing, experimenting and observing. He himself was a skilled and ingenious experimentalist, and a keen observer. Therefore, he guided his

---

*Al-Razi means the man of Ray, a small town near the modern Tehran. He was a Persian, born in 366 A.D., and died on October, 26, 925. He was a skillful player upon the lute, studied philosophy, chemistry and became famous as a physician. He served as the chief physician at the hospital at Ray and was afterwards made director of the largest hospital at Bagdad.

13Ibid., p. 19.
student in the same method of learning. He was the first to contribute a clear and useful classification of chemical substance and believed in systematizing knowledge. The same methods and the scientific outlook is shown in the discovery of new plants and the drugs which were produced from them. For instance, the physicians cultivated botanical gardens in which introduced rare medical plants which they brought back from their travels.

Turning from medicine to the study of astronomy, again, progress was evident in the light of the scientific methods and the scientific instruments.

A number of observers set out from the point of a meridian. Some went to the north, others to the south, until they had seen the pole star rise and sink one degree. They then measured the distance traversed and took the means of the results. Like observations were taken scientifically at "Baghdad" and "Jundishapur." An observatory was established near Baghdad, the Shammasiya gate. Another was built by the Iranian scientist, philosopher and statesman Masir-al-Din Tusi (1199-1274) at Maragheh, northwest of Iran; another again at Samarqand, northeast of the Caspian Sea. From these observations, experimentations and developments of observatory instruments the table called "tested table" was prepared, "Ilkhanian" table and "Ulugh-beg" table were the outcome. The calendar was produced, the altitude of the sun and the length of the
Solar year was naturally determined. Calculations or observations relating to the first appearance of the moon, to the inclination of the ecliptic, to the length of the tropic and sidereal year, to land anomalies, to eclipse, to parallaxes, in a more complicated and more accurate form were presented. The first notions of trigonometrical ratios, as it is used today, was popularized. The third lunar inequality which is called today "variation" was discovered. Many other discoveries in this field and in other fields were made only because of scientific methods and the great devotion given to the perfecting of instruments.

In higher education, observation, experimentation, inductive as well as deductive reasoning, practice, laboratory work and analysis, as well as synthesis, were employed.

II. ELEMENTARY EDUCATIONAL METHODS

According to the Islamic doctrine, every child up to the age of being discern is innocent. The parents have the responsibility of educating their children, that is guiding them to behave intelligently.

Respecting the child as an innocent creature involves guidance, providing a protected environment and giving the child an opportunity to develop according to the teaching of the Quran.
Belief, according to Islam, is not only a conviction of the truth of a given proposition, it is essentially the acceptance of a proposition as a basis for action. This principle of Islam makes the reading of the Qur'an one of the daily duties of each "Muslim" and invites him to act according to the teaching of the Qur'an. The reason for putting daily reading of the Qur'an as a constituent of "Muslim" faith is self-evident.

The duties of "Muslims" involve a compulsory teaching of the holy book in early childhood. Reading the Qur'an and understanding it correctly, in order to practice it daily, involves also grammars and elementary rhetoric.

The methods of teaching of these elementary elements of Islam in early Islamic centuries were individual teaching and the monitorial method, which probably was borrowed from India. The teacher taught the pupils individually. The elders and the outstanding pupils were selected as monitors and led to teach the others.

The Qur'an is arranged logically, that is, from easy to difficult and from simple to complex. As the elementary schools were concerned with daily life and the curriculum was derived from the fundamentals of Islamic society, the pupils in a practical way would get mastery of basic religious learning, especially in reading and writing.

Some of the great thinkers of Islam were interested in the education of children. They usually dealt with the
importance of methods of teaching. An example of these was Ibn-Sina* (930-1037). He adapted the traditional psychological doctrines of Aristotle and on that basis developed a psychological and ethical principle of love which was all his own.

On this psychological basis, he pointed out that each type of soul has a specific form of love and specific type of objects with which it desires to be unified. On this basis, Ibn-Sina, in his treatise on economy, explained the methods which should be used by parents in educating their children. He insisted on choosing a good name for the child, selecting a learned and virtuous teacher, providing a protected environment and teaching the child a vocation fitted to the child’s interest and abilities, and which was satisfactory to him. In his Canon, Ibn-Sina emphasized that no one should conflict with the child’s interest until the age of six. The reason for this was to protect the child from complex emotions such as fear and anger. He believed that the

*Ibn-Sina (930-1037) was born in Afshaneh near Bukhara, today to the northeast of Iran, in the year 930. He studied basic religious education at early childhood, learned mathematics, became a student of law. At 16 years he had advanced so far in medicine that adult physicians went to learn from him. He studied philosophy, wrote nearly 100 treatises in different fields, became famous both in the west and the east as an authority, specially in medicine, and died in Hamadan in the west of Iran. There his millennium was held in 1952.
child up to the age of six should be free to find the specific type of objects and learning in which he was interested.

Ibin-Sina believed that from the age of six to fourteen, the child should be put in a school but all his time should not be used in academic studies. He also believed that the child is digesting his meal and his stomach is not empty, he should play and exercise in order to improve his physical fitness. Among the games and exercises suggested by Ibin-Sina can be found: walking, running, hiking, wrestling, jumping, casting, horseback-riding, roping and playing ball.

Consequently, it ought to be noted that Ibin-Sina used his methods of educating the child on the child's freedom of activity, interest, (particularly in choosing a vocation); the child's ability, and on natural growth.

Ghazzalīr Algażel* (1058-1112), summed up his famous work, The Revivification of the Science of Religion, written both in Arabic and Persian, and published in 1106.

*Algażel was born in Gazel, a village near Tus in Northeast Iran. He studied the basic religious doctrines, became interested in mathematics, natural sciences, logic and philosophy. At the age of 30 he became famous when he was appointed to teach in the University of Nezamiyyah at Baghdad. He traveled to Egypt, wrote nearly 100 books on theology, philosophy, religion, ethics, and died December 11, 1112.
His theories were based upon the method of dialectics. Algasel after discussing the behavior of students towards teachers, the behavior of son towards parents and vice-versa, points out that the child, most of the time, learns through observing his teacher’s behavior and takes him as example. The child also considers his teacher as the best, listens to her talk, and acts as the teacher acts.

In the Persian copy, which is a summary of the book, he has emphasized the natural potentialities of the child, his teachability, and the importance of his attitudes.

Algasel believed that in teaching, private-advisory talk should be used instead of harsh discipline; protective environment should be provided for establishing good habits; and motivation would be stressed as the main basis of the methods of teaching.

Algasel also emphasized the importance of the senses in learning. He suggested observing beautiful scenery for sight, smelling good smells for the sense of smell, and listening to good music for the development of the sense of hearing.

Although Nasir-Al-Din Tusi (1199-1274), became famous as an astronomer and geometer, his educational ideas are also important.

Tusi is known as the Montaigne of the East. He was aware of the significance of psychology and the importance of the laws of nature.
In his treatise, *Ethics*, he has summed up a psychological basis for teaching the child. For instance, he says:

And the best would be a consideration of the child's nature, so that his potentialities and his abilities would become known, as a result to find out what does interest him and the child would be guided to learn what interests him. For everyone has not the interest and ability for all kinds of learning. If this was so all people would turn to the best professions. In these differences which exist in the nature of people rests a secret and a wonderful thought which benefited the order of universe and the resistance of mankind.  

Later, he said that if the right subjects were taught to the right pupil, the child would develop gradually to the best of his potentialities and achieve the right outcome. Otherwise, it would be a waste of time. Then on the importance of the child's interest, he suggested that if the child has no interest in studying certain subjects, or if his organism does not adapt to that subject, he should transfer to another field of study.

In connection with character building, his ideas are reminiscent of those humanists of the west when he says: "follow nature; whatever power is stronger in the nature of the child should be stressed and completed."  

---


15Ibid., p. 106.
Consequently, it should be noted that Tusi based his teaching on the principle of interest and recognized the individual abilities and drives among both girls and boys. He also was aware of the importance of the laws of nature as related to the nature of the child as a basis for teaching methods.

Sa-di* (1212-1293) by means of a number of pleasant stories, in his essay Effect of Education, (a part of Golestan), has taken the natural ability and capacity as the basis of learning. In the Fourth Story of Chapter I, Sa-di says:

Waste not thy labor in scattering seed upon a briny soil, for it can never be made to yield spikenard. Rain, on the purity of whose nature there is no disagreement, cherishes the tulip in the garden and the common weed in the salt marsh. How can any person manufacture a tempered sabre from base iron; nor can a bad-natured man, a wise-aere, be made a gentleman by education?16

In the first story of the essay on the Effect of Education he is still more emphatic in his views:

Where the innate capacity is good, education may make an impression upon it; but no furnisher knows how to give a polish to bad-tempered iron.17

---

*Sa-di, the Iranian poet and moralist of the thirteenth century, was born in Shiraz in the year 1212. He traveled a lot and studied at Baghdad. His Golestan, or Garden of Roses, is known by all Persians who can read and also is known in the western world.


17Ibid., p. 178.
Along with the importance of heredity, Sa-di has stressed the importance of right companions and of "practice as well as apprenticeship."

III. CONTRIBUTIONS TO THE BROAD PROBLEM OF EDUCATIONAL METHODS

The broad problem of methods of education of the Islamic culture was an outcome of the philosophical interpretation of human nature and the aims of their education. The general aim of education was intelligent and virtuous behavior derived from the teaching of the holy book.

Reaching the point where one behaves intelligently involved going through a personality evaluation. Islamic doctrine has taken the child in a natural condition but his nature would be subject to evil and transgression at the several stages of his growth. So long as he is devoid of high moral qualities, he might be subject to the lowest state. This stage has been considered as present as long as the individual does not walk in the light of true wisdom and knowledge but acts in obedience to natural inclinations of eating, drinking, and sleeping; which lead him to become enraged or excited. This stage which is governed by passions should be guided by wisdom and knowledge. Knowledge and wisdom will be able to hold the reins of man's natural desires.

The result of knowledge is the service of controlling
passions would be a moral transformation in one's soul from crossness to virtue. This stage is called the self-accusing spirit (conscience). As stated in the Quran:

And may I call to witness the self-accusing spirit (on every dereliction of duty or on the slightest act of disobedience, being conscious of having offended).

The tendency of the self-accusing spirit would be generating noble qualities and a virtuous disposition. It tends also to transform life so as to bring the whole course and conduct of it to moderation. However, it is not enough to practice virtue exclusively. Therefore, for the necessity of intelligent behavior one has to attain moral excellence and go through the third stage in which the one is sure and aware of his whole action. The condition of the soul at this stage has been called "soul at rest."

O soul that art at rest (and restest fully contented with thy Lord), return to thy Lord, well pleased (with Him) well pleasing (Him); so enter among my servants and enter into my garden.

At this stage the individual has found rest in his lord. It is this life and not after death that this great transformation is worked and has led him to intelligent behavior. Its result also is in this world and not

---

13 Qur'an, lxv, 2.
19 Qur'an, lxxxix, 27-30.
elsewhere, that, in access to paradise is granted to it and he receives the advantage.

The physical conditions of man are closely connected with his moral and spiritual states, so much so that even his modes of eating and drinking play a part in the molding of his moral and spiritual qualities. Therefore, the teaching of the Quran, considering the modification of behavior, applied itself abundantly to the reformation of the physical state of man's life. The soul is not something to be considered separate from body. Mirza-Ghulam Ahmad explains:

The soul is a light which springs up from the body which is being prepared in the womb. By the springing up of the soul I only mean that at first it is hidden and imperceptible, although its germs are present in the seed, itself, and that as the body is gradually developed, the soul grows along with it and becomes manifest. There is not the least doubt that the inexplicable connection of the soul with the seed is in accordance with the design of God and with his permission and will. It is a bright essence in the seed itself. It is not a part of it in the sense in which matter is part of matter, but at the same time it is untrue to say that it comes from outside, or as some wrongly imagine, falling upon earth is mixed with the substance of the seed. It is hidden in the seed as fire is latent in the flint.\(^{20}\)

The methods of achieving this stage of personality, that is behaving intelligently, also are suggested by the holy book.

Quran advises the adults to take its general direction as rules of guidance for all the stages of life.

and suggests that parents should be examples to their offspring.

The best method in cultivation of noble qualities such as chastity, honesty, meekness, politeness, forgiveness, goodness, courage, veracity, patience, and sympathy, which enable an individual of the age of discretion to abstain from inflicting injury upon fellow men and to reach self-direction, would be the institution of prayer. By requiring the observance of praying at a certain time, Islam makes praying an institution. Praying is taken as a means of moral elevation. Partaking of it five times a day, therefore, refreshes the soul daily, as food does the body. It purifies the heart, which is the only way to communication between God and men. It guides a Moslem to safeguard against evil and to act according to the accepted principle.

According to Islam, right belief is nothing if not carried into practice. The nourishment of the good seed of the right belief would be good deeds.

Following this principle, one can see that Islam advocates the method of practice for the development of one's personality and for the maintaining of moral evolution, and, as a result, behaving intelligently.

Qur'anic rules also should be taken as a method supplementary to the above mentioned ones. The rules which direct the intentions and actions of man, are such that he
may not injure the life, property or honor of his fellow beings by means of his tongue, or hand or eye or any other member of his body. In short, self-control would be obtained through good conduct of parents, providing opportunity for growing and directing the senses, maintaining the right habits, practicing, daily-praying and doing good. These methods are based on the five main Islamic principles. They are, (1) a belief in God, the great unseen, (2) a belief in divine revelation, and (3) a belief in the life to come; and on the practical side, (4) praying to God, and (5) charity in its broadest sense, indicating the performance of one's duty to an unseen God, and the performance of one's duty to fellow men.
CHAPTER VII

THE CONTRIBUTIONS OF THE MODERN EDUCATORS
TO THE EDUCATIONAL METHODS

The steps toward modern civilizations are discussed in Chapter VII as containing elements of cultural movements. The contributions of the naturalists and the development-alists on the basis of the principles of acquiring knowledge contributed by the British empiricists are interpreted.

I. INTRODUCTION TO MODERN CIVILIZATION

Historical facts indicate that for a period of three centuries the Crusades caused some changes. East and West were brought in touch with each other, producing various problems for both. Islamic culture helped in transferring Europe from medieval to modern civilization. Geographical exploration after the dark ages awakened the curiosity of many thinkers. Travelers returning from newly discovered lands revealed new customs, new religions, and new riches.

The "revival of letters" and the rise of great men stimulated the dawn of scientific thinking. Some of the most notable men were Petrarch (1304-1374), Dante (1265-1321), Boccacio (1313-1375), Ariosto (1474-1533), Cervantes (1547-1616), John Wycliff (1455-1537), Marlow (1564-1593),
Shakespeare (1564-1616), and Thomas More (1478-1535).

The impact of the writings of these men changed the "social conscience" of Europe and eliminated many traditions, superstitions and imbeded customs. New ideas were popular and examination of "why's and how's" made it possible for a new way of reasoning, thinking and doing.

Another mark of progress which brought about the revision of methods of thinking and approaching factual goals was the rise of scientific inquiry. Copernicus (1473-1543) published his De Revolutionibus Coelestium Orbium; Kepler (1571-1630) confirmed the Copernican theory; Galileo (1569-1542) encompassed the whole physical universe with mathematical research; Bacon (1561-1626) wrote his Novus Organum. The work of these scientists and writers brought about the rise of humanism, the Renaissance, and the reformation. A new sense of judgment was awakened in millions, giving them a new outlook, as well as establishing a new social order.

The outcomes of these movements were a transition from the medieval age to the modern scientific era, a shift from the uniformity of medievalism to the idea of development of individualism; and diminishing of the authority of the Church along with the increasing of the authority of science and intellectualism. It brought about a change in the life of man, his relation to the world and his purpose. Man became interested in himself and human
relations were emphasized. One of the things that resulted from science and the few movements taking place from the 13th century to the 17th century was a profound change in the conception of man's place in the universe. In the medieval world the earth was the center of the heavens, and everything had a purpose concerned with man. In the Newtonian world, the earth was a minor planet, its nature ready for scientific research, with man a subject of philosophical investigation.

On the one hand, therefore, the great modern scientists, using the inductive method, began to discover the laws of nature, and on the other hand, the great thinkers began to discover the laws of thinking as well as acquiring knowledge. They began to find out, at least in some degree, the secret principles by which the human mind operates.

II. THE PHILOSOPHICAL BASIS OF ACQUIRING KNOWLEDGE EFFECTIVE ON EDUCATIONAL METHODS

On the continent, Descartes, the founder of modern philosophy, pointed out that the laws of thinking and the

---

*Descartes (1596-1650) was born in France and educated at the Jesuit College of LaFleche. He left France in order to travel in Europe, enlisting in the Dutch and later in the Bavarian armies. He revived the study of Plato and broke down the rigid scholastic system. In Holland, where he lived twenty years, he wrote his famous work, *Discours de la Methode*. 
laws of external world are identical. Knowledge of external things are obtained by the mind, not by the senses. Descartes' famous phrase "cogito ergo sum" became the kernel of the theory of knowledge.

In following this principle the important tendency is attached to subjectivism and to the mind, rather than to the objectivism and matter. Therefore, according to Descartes, the perception of objects was not due to vision or touch or imagination, but was dependent upon their inspection by the mind. For instance, when observing a piece of wax, certain qualities such as taste, smell, color, size, and shape would be apparent to the senses. If the piece of wax is put by the fire, these qualities would change although the wax persists. Therefore, what was apparently in the senses was not wax itself. The piece of wax was constituted by extension, flexibility, and motion, which were understood by the mind. So would it be in all other cases. The generalisation would be that all knowledge took place through the mind and that the mind was superior to sense perception and experience.

Descartes' successors followed the same pattern. They stressed that, apart from the senses, man is endowed with a special power which is known as reason. Although experience would help man in his learning, man could only know a part of the fact through experience, not the whole fact. The whole knowledge of a certain fact is dependent
upon the mind. The principles of the senses were considered invalid and the principles of reason were considered to have absolute validity. That is explained as both subjective and objective validity. This movement, although contributing a great deal to the field of philosophy, had little to contribute to educational methods or to educators.

The British empiricists, who were in opposition to the philosophy of the Continent, began to discover the secret principle of the operation of the mind in a different way. John Locke, the founder of the system of philosophy known as empiricism, dealt with the discovery of the principles of the operation of the mind in a new way. Through the observation of the method of introspection, Locke called attention to the fact that thinking is in terms of ideas, these are expressed by such words as whiteness, hardness, sweetness, and motion. He pointed out that the first task of every human being would be how he could come by these ideas. In discovering how one got these, Locke appealed to everyone's own observation and experience. Both

*John Locke (1632-1704) was born at Wrington. He began his studies in Westminster School where he continued to the year 1651. Locke became known as one of the most ingenious young men in Christ Church College in Oxford, which he attended later. After a time he became famous. His Some Thoughts on Education and his Essay Concerning Human Understanding are among the most influential books of all time. He died at the age of 69.
internal and external observation is explained by him:

Let us then suppose the mind to be, as we say, white paper, void of all character, without any ideas; how comes it to be furnished? Whence comes it by that vast store, which the busy and boundless fancy of man has painted on it with an almost endless variety? Whence has it all the materials of reason and knowledge? To this I answer, in one word, from experience; in that all our knowledge is founded, and that it ultimately drives itself. Our observation, employ either about external sensible objects, or about the internal operation of our minds, perceived and reflected on by ourselves, is that which supplies our understandings with all the materials of thinking. These two are the foundation of knowledge, from whence all the ideas we have, or can naturally have, do spring.1

Leake harked up the above mentioned ideas by observation of children. He pointed out that by attentively considering the state of a child at his first coming into this world, it should be noted that without doubt no child possesses any well stored mind when he comes into this world. It is by degrees that the child is furnished with ideas. The objects surrounding him perpetually affect the child's mind and willingly or unwillingly ideas derived from objects would be imprinted on the child's mind. The child's senses would be busy with the objects of sensation; his sight with light and colour, his ear with sound and voice, and his touch with hardness and coldness. The result of this idea was the removing of the traditional doctrine that men possess innate ideas at their birth.

He that attentively considers the state of a child at his first coming into the world, will have little reason to think him stored with plenty of ideas that are to be the matter of his future knowledge. It is by degrees he comes to be furnished with them; and though the ideas of obvious and familiar qualities imprint themselves before the memory begins to keep a register of time or order, yet it is often so late before some unusual qualities come in the way, that there are few men that can not recollect the beginning of their acquaintance with them: and, if it were worth while, no doubt a child might be so ordered as to have but a very few even of the ordinary ideas till he were grown to manhood. But all that are born into the world being surrounded with bodies that perpetually and diversely affect them, variety of ideas, whether care be taken about it or not, are imprinted on the minds of children. Light and colour are busy at hand everywhere when the eye is but open; sound and some tangible qualities fail not to solicit their proper senses, and force an entrance to the mind; but yet I think it will be granted easily, that if a child were kept in a place where he never saw any others but black and white till he were a man, he would have no more ideas of scarlet or green that he that from his childhood never tasted an oyster or a pineapple has of those particular relishes.2

Founding a new basis for the interpretation of the nature of human nature and pointing out the state of man, Locke, in Book II of the Essay Concerning Human Understanding has given the sources of acquiring knowledge, the ways that the mind operates, the method of getting complex ideas out of the simple ideas and the relationship of ideas which give a complete circle of thinking.

He began with two sources from which ideas are

derived. The first source would be sensation, and the second, perception of the operation of minds which may be called internal senses or reflection. These two are the fountains of knowledge from which all ideas spring.

First, the senses, conversant about surrounding bodies, convey the sensible objects into the mind. Senses are the great source of most of the essential ideas that one has. Secondly, the mind begins to operate on what has been conveyed through the senses. The mind doubts, believes, reasons and does all different acts of itself. From these activities the mind receives understanding as distinct ideas:

Our senses, conversant about particular sensible objects, do convey into the mind several distinct perceptions of things, according to those various ways wherein those objects do affect them; and thus we come by those ideas we have of yellow, white, heat, cold, soft, hard, bitter, sweet, and all those which we call sensible qualities which when I say the senses convey into the mind, I mean, they from external objects convey into the mind what produces these perceptions. This great source of most of the ideas we have, depending wholly upon our senses, and derived by them to understanding, I call "sensation."

The other fountain from which experience furnisheth the understanding with ideas, is the perception of the operations of our own minds with in us, as it is employed about the ideas it has got; which operations when the soul comes to re-flect on and consider, do furnish the understanding with another set of ideas which could not be had from things without; and such are perception, thinking, doubting, believing, reasoning, knowing, willing, and all the different acting of our own minds; which we, being conscious of, and observing in ourselves, do from these receive into our understand­ing as distinct ideas, as we do from bodies
affecting our senses. This source of ideas every man has wholly in himself; and though it be not sense as having nothing to do with external objects, yet it is very like it, and might properly enough be called "internal sense." But as I call the other "sensation," so I call this "reflection," the ideas it affords being such only as the mind gets by reflecting on its own operations within itself. By reflection, then, in the following part of this discourse, I would be understood to mean that notice which the mind takes of its own operations, and the manner of them, by reason whereof there come to be ideas of these operations in the understanding. These two, I say, viz., external material things as the objects of sensation, and the operations of our own minds within as the objects of reflection, are, to me, the only originals from whence all our ideas take their beginnings. The term "operations" here, used in a large sense, as comprehending not barely the actions of the mind about its ideas, but some sort of passions arising sometimes from them, such as is the satisfaction or uneasiness arising from any thought. 3

Locke, after establishing the sources of sensation and reflection as the original and foundation of all the materials of one's knowledge, has explained the psychological significances of the ideas of reflection and has pointed out why most children get ideas of the operations of their own minds rather late in life. Locke interpreted this lack in children to the fact of their delight in the variety of changing objects. They grow up without a constant attention to outward sensations. This lack of attention seldom makes it possible for children to do reflective thinking until they mature and are able to pay

3Ibid., p. 26-27.
more attention to the objects of reflection. Sensation, the great source of most ideas, is dependent on senses. Reflection, the second source of ideas, is dependent on attention.

These two are the sources of all simple ideas which the mind neither can make nor destroy. Some of these simple ideas are conveyed into the mind by one sense only. Thus, light and colors, as white, red, yellow, blue, with their degrees or shades, as green, scarlet, purple, and sea-green are conveyed by sight. All kinds of noises, sounds, and tones enter by the ears; several tastes by the palate. The most important simple ideas of the sense of touch are heat, cold and solidity, also all those of sensible configuration such as smooth and rough.

There are other simple ideas which are conveyed into the mind by more senses than one. The ideas of space, figure and motion are those which are conveyed to the mind by diverse senses. For instance, the ideas of motion make perceivable impression both on the eyes and touch and the rest of these ideas would enter into mind both by feeling and seeing.

Thirdly, there are ideas which convey themselves into the mind only by reflection. The idea of willingness and the idea of perception convey themselves into the mind through reflection. Some of the simple ideas of reflection, taken into account by Locke, are remembrance, discerning,
reasoning, judging, knowledge, and faith.

Fourthly, some ideas are suggested to the mind by all the ways of both sensation and reflection. Pleasure or delight, and its opposite, pain or uneasiness, power, existence, and unity are among those ideas which convey themselves into the mind by all the ways of sensation and reflection.

When understanding is once stored with these ideas, the mind by its power can remember, repeat, compare, compose, and unite them in order to make new, complex ideas. Minds in working with these complex ideas, can find the relation between ideas, the agreement and disagreement, that is, knowledge. "Knowledge, then, seems to be nothing but the perception of the connection of and agreement, or disagreement and repugnancy, of any ideas." These agreements or disagreements consist in (1) identity, (2) diversity, (3) co-existence as necessary connection and (4) real existence of ideas. This would be intuitive knowledge if the agreement or disagreement of ideas is without intervention of other ideas.

It would be demonstrative if the mind perceived the agreement or disagreement of these ideas, but not immediately. The most certain type of knowledge would be the sensitive knowledge of particular existence. This type of

---

4Ibid., p. 267.
knowledge goes beyond bare probability and is of the existence of particular external objects.

In short, it should be noted that John Locke discussed the state of man as an individual whose knowledge is dependent on his experience and observation. Locke contributed the doctrine of objectivity and considered facts as real as they stand. A circle of thinking would be explained thus: senses convey the ideas of sensation to the mind; out of simple ideas the mind makes complex ones, and in the light of its faculties, as well as its operation, the mind finds agreement or disagreement between ideas; that is, acquiring knowledge. This contribution of Locke became the corner stone of the methods of education of the great educators of the next century, known as developmentalists.

III. COMENIUS' CONTRIBUTIONS TO EDUCATIONAL METHODS

Before discussing the contribution of Locke to educational method, it should be noted that from the age of the Renaissance up to the French Revolution some of the great educators were emphasizing the need of proper educational methods. Among these, Vittorino Da Feltre (1378-1446), Juan Luis Vives (1492-1540), Richard Mulcaster (1531-1611), Francis Bacon (1561-1626), Wolfgang Ratke (1571-1635) and John Amos Comenius were outstanding.
One of these educators, who has often been considered to be the first modern educator, was Johann Amos Comenius (1592-1670).*

Comenius was influenced by Bacon's *Novum Organum*. He adapted Bacon's emphasis on induction to his method of teaching. Through this principle he was guided to contrive specific methods for teaching wherein bodily organs would be brought to the aid of learning. He pointed out that the child would use his senses in learning. Sometimes he is in need of using one of his senses; sometimes a few of them together. He advocated that the process of learning would be started first through the medium of the senses. Special emphasis should be laid upon the logical sequence and the articulation of the subject, as well as the parts of the subject. The important parts of the subject should be emphasized. Comenius believed in the continuity and the comprehensiveness of everything which was learned as well as keeping in view those things which have real use. His *Orbis Pictus* has been a good example of his methodology. Comenius in the preface of *Orbis Pictus* mentioned that though it is a little book, the pictures

---

*Comenius was born to a Moravian family, studied under the most advanced scholars in the best universities of his time. The educational ideas and ideals of the age find the most comprehensive and systematic embodiment in him. His main contribution was in method, which was introduced in his Great Didactic.*
are the representation of all visible things. Pictures do more than please children's eyes, children are delighted with pictures. He pointed out that objects and pictures stir up the child's attention. Senses, the main guides of childhood, only will be sharpened more and more while they are used in the appropriate place. When objects are presented to the senses, the senses grow merry and willingly suffer themselves till the child learns and the objects become sufficiently discerned.

Thus at last this school would indeed become a school of things to the senses, and an entrance to the school intellectual. But enough! Let us come to thing itself.5

Comenius in teaching science believed that the knowledge of any science would be acquired through perceiving the objects of that subject and requiring sufficient attention for perception of the objects. The knowledge of any science depends upon a sincere observation, establishing the proper relationship between the objects and the sense (sight), and following the sequence of the objects one after another. Everything, therefore, should be placed before the senses, and the golden rules of every teacher must be the fact that everything is learned by actual observation through sense-perception. In case of the lack

of procured objects, their representations may be used. Models may be used in physics, geography, geometry, botany, zoology, and physiology. In the acquisition of an art, Comenius pointed out that there should be a model which the pupil may examine and then try to imitate; there should be material of the new form. Progress, in art studies comes primarily through practice. Practice, example, analysis, synthesis and imitation are the main methods of acquiring knowledge of art.

Since religion occupied the most exalted place in the educational system which had been outlined by Comenius, the child's heart thus should be joined to God's love. This could be accomplished through meditation, prayer, and examination. The child would be habituated to the outward work which God commands in order that the child may be practically a believer in God.

Comenius pointed out that discipline should be free from personal elements, such as anger and dislike, and should be based on sincerity. Teaching involves a relation between the teacher and the learner. That relation involves discipline, and discipline should be mild along with frankness. It should be severe in any cases of moral delinquencies.

Consequently, it should be noted that with Comenius' methodization of the process of instruction there was also a systematization of educational organization. He considered
the first twenty-four years of human life as the period of plasticity and recognized it in four different stages:
(1) the first period would be the first six years and should be spent at home; that is, in the school of mother's knee. The second period would be from six to twelve and that should be spent in the vernacular school. The third period would be from twelve to eighteen and that should be spent in Law School or Gymnasium. The fourth period would be from eighteen to twenty-four years of age and that would be spent in the University. Outstanding students could go to the College of Light.

In all these periods mothers, teachers, and all instructors should take accuracy, naturalness and artistry as the criteria of their teaching. Teaching is an art of organization. The teacher should know what to organize, for whom to organize, and how to organize, as it is mentioned in Modern Educators and their Ideals from the Great Didactics:

The art of teaching, therefore, demands nothing more than the skillful arrangement of time, of the subjects taught, and of the method. As soon as we have succeeded in finding the proper method it will be no harder to teach school-boys, in any number desired, than with the help of the printing-press to cover a thousand sheets daily with the neatest writing, or with Archimedes's machine to move houses, towers, and immense weights, or to cross the ocean in a ship, and journey to the New World. The whole movement of a clock whose motive power is supplied by the weights, It will be as pleasant to see education carried out on my plan as to look at an
automatic machine of this kind, and the process will be as free from failure as are these mechanical contrivances when skillfully made. 6

IV. Locke's Contributions to Educational Methods

The educational methods introduced by Locke were outcomes of his empirical philosophy and experimental psychology. His point of view on the nature of human nature, as well as his outlook on the external world, stood as the basis of his educational methods.

The child possesses a flexible, teachable and adaptable nature in his early days. His senses are the best instrument to establish his relation with his environment. His heart has the potentiality that makes for social relations with other children, as well as with adults. His gradually furnished mind has the ability to make him aware of his existence. Therefore, the child, in coming to this world has a threefold state; one with others, one with external objects, and one with himself.

Locke, not believing in the existence of innate ideas, has explained that the child gradually, through his senses, will receive ideas of different kinds and stores his mind with them. The best method for acquiring new ideas, Locke advised, would be observation, experience,

and play. This follows the principle that the learning of the child should be obtained by activity of the organs of sense rather than second-hand information, that is through books and information given by adults. Locke has pointed out that there may be a need of selecting objects for experimentation with the child by adults. This opportunity for adults brings out the psychological points on which the educational methods of Locke are based. This psychological view demands a selection of objects which would be related to the child's interest.

Locke, being aware of the defects of education of his age, pointed out that the child's special aptitude and capacities were ignored by his program of studies and his rote-memory was overtaxed by things which were out of the child's spontaneous interest. In other words while Locke believed that the child through his senses and experiences had to convey ideas into his mind, he felt that the child should have suitable ideas. This required consideration of psychological principles of teaching.

Locke's philosophical views on the nature of the child and his belief in the doctrine of direct experience made him aware of the importance of early childhood:

The great mistake I have observed in peoples breeding their children has been, that this has not been taken care enough of in its due season; that the mind has not been made obedient to rules,
and pliant to reason, when at first it was most tender, most easy to be bowed.  

Locke recognized another psychological principle of learning; that is the principle of readiness. He also advocated the method of repeated practice in teaching the child. He believed that through repeated practice, the child would form correct habits in relation to his subject of learning and consequently gain the mastery of it:

This method of teaching children by a repeated practice, and the same action done ever and ever again, under the eye and direction of the tutor, till they have got the habit of doing it well, and not be relying on rules trusted to their memories, has so many advantages, which way soever we consider it, that I cannot but wonder (if ill customs could be wondered at in anything) how it could possibly be so much neglected.

Since time is too short for a child to learn what he needs for his living through direct experience, Locke advocated that the child acquire knowledge through the experience of others; that is, through letters. He advocated that learning be made a play and recreation to children and that in this way they could be brought to desire being taught.

Thus children may be cozened into a knowledge of the letters; be taught to read, without perceiving it to be anything but a sport, and play themselves


8 Ibid., p. 45-46.
into that others are whipped for. Children should not have anything like work or serious, laid on them; neither their minds nor bodies will bear it. It injures their health; and their being forced and tied down to their books, in an age at enmity with all such restraint, has, I doubt not, been the reason why a great many have hated books and learning all their lives after; it is like a surfeit, that leaves an aversion behind, not to be removed. 9

Following this view, Locke advocated that playthings might be fitted to the purpose of reading. For example, a teacher in his teaching could use an ivory ball. This ball might be like that of the "Royal-Oak" lottery with thirty-two sides, upon their sides the letters are pasted. The child while playing would learn.

Even in using this simple tool, Locke advocated that the teacher should go from simple to complex. He should start with a "Royal-Oak" ball lottery which has several B's on its sides, several A's upon another and so on. Then reducing the numbers of A's to one in order that each side would consist of one letter. He also advocated that, after the game is over, the ball should be placed away from the child so that its presence would not grow stale to him.

The letters pasted upon the sides of dice, or polygon, were best to be of the size of those of the folio Bible to begin with, and none of them capital letters; when once he can read what is printed in such letters, he will not long be ignorant of the great ones; and in the beginning he should not be perplexed with variety. With
this die also, you might have a play just like the Royal Oak, which would be another variety; and play for cherries, or apples, etc.  

The result of this type of teaching would be stimulation for learning. It maintains the child's eagerness in his studies. In teaching writing, drawing, foreign languages, and even mathematics, Locke advocated that teachers should be aware of psychological as well as logical doctrine; the latter for learning, and the former for keeping the child's eagerness in his work.

Concerning the broad problem of method, the child, although considered as a reasoning creature by Locke, is also considered immature. While the child's nature is completely flexible, the father must take advantage of the situation and establish his authority, as the following quotation by him indicates:

Be sure then to establish the authority of a father, as soon as he is capable of submission, and can understand in whose power he is. If you would have him stand in awe of you, imprint it in his infancy; and, as he approaches more to a man, admit him nearer to your familiarity: So shall you have him your obedient subject (as is fit) whilst he is a child, and your affectionate friend when he is a man.

Locke's ideas concerning the relation between the child and his elders make him a disciplinarian, while his ideas concerning the child's relation to the external objects make him an experimentalist.

10 Ibid., p. 119.
11 Ibid., p. 32.
Concerning the relation of a child with his parents, as in general with elders, Locke did not advocate a strict discipline. He did not believe in corporal punishment. Neither did he believe in rules and regulations. He was completely aware of the fact that great punishment does but very little good. Whatever rigors found necessary should be changed into a milder sort of government. Reverence, respect of elders and many other qualities would begin early. The elders are responsible for keeping up the child's spirit. Locke explained that through giving praise in public and blame in private, providing appropriate rewards and rational freedom, practicing the right examples, requiring association with the right company, avoiding beating, and reducing rules, the child will grow up in the proper manner. As he has stated in the following words:

"He, therefore, that is about children, should well study their natures and aptitudes, and see, by often trials, what turn they easily take, and what becomes them; observe what their native stock is, how it may be improved, and whether they be capable of having it wrought into them by industry, and incorporated there by practice; and whether it be worth while to endeavour it. For, in many cases all that we can do, or should aim at, is, to make the best of what nature has given, to prevent the vices and faults to which such a constitution is most inclined, and give it all the advantages it is capable of. Every one's natural genius should be carried as far as it could be; but to attempt the putting another upon him, will be but labour in vain, and what is
so plastered on, will at best sit but untowardly, ungracefulness of constraint and affectation. 12

From the foregoing discussion of Locke's contributions, one can derive the following principles:

1. By removing the doctrine concerning the existence of innate ideas, he laid the basis for the principle of direct experience.

2. From observation of children and the study of the operation of the mind, he advocated the principle of psychology of learning.

3. As a result of applying experimental psychology he advocated the principle of interest and introduced the advantage of playing.

V. ROUSSEAU'S CONTRIBUTIONS TO THE EDUCATIONAL METHODS

Jean Jacques Rousseau (1712-1778). Locke contributed the principles of objectivity, that is, believing in the reality of the objects in the world as one perceives them through senses. Locke also advocated the theory of "tabula rasa." Thus removing the accepted

---

12 Ibid., p. 46.

*Rousseau did not receive a systematic education, but developed his personality through reading and sharpened his senses through the observation of nature. Although it is said that he led a life of a vagabond and of abandon, he was a free and a revolutionary person, who devoted his life to the departments of human activity; philosophy, science, religion, ethics, economics, and pedagogy.
principle of a priori ideas and agreeing that only experience writes on the white sheet of mind and that all ideas are a posteriori. This second principle was dependent upon the principle of experimentation and practice. Thirdly, as far as Locke was concerned, methods of education became more psychological, but the child was subject to his time.

Rousseau accepted the first two principles as the basis of his contribution to educational method. In the place of the third one, he contributed the principle of freedom, by which he would entirely liberate the child from every bondage, and made that principle the sole guidance for education, at least for the childhood period.

In order that these principles of experimentation, activity and freedom be effective, Rousseau recognized the urgent need of basing his pedagogy on his observational psychology and basing his psychology on biology.

Biologically, Rousseau found that the child is endowed with inner drives by nature. He advocated that the inner senses, which are the child's basis of feeling, should be the spring of all his actions.

The child's inner drive was also considered by Rousseau as a basis of the child's curiosity. That is why the child would be interested in, and try every new object. These tryings, according to Rousseau, were an apprenticeship of learning. The child, while he is endowed with a
great capacity, is also endowed with an ability of
curiosity, while he is endowed with inner drive, while
he is endowed with an ability to do experimentation, while
he is endowed with external senses, while he is endowed
to be loved and be respected for what he will be in his
adulthood, he is weak in his childhood. Therefore, he
should be loved and nature would eliminate his weaknesses.

The child's future is dependent upon his prolonged
childhood and that prolonged childhood should naturally
be for the development of his endowments and the elimina-
tion of the weaknesses of his physical organs.

In developing his physical organs the child needs
opportunity to act as the natural state of his inner drives
demand. In other words, he is subject to the nature of
biology, that is, growth. Since growth is gradual and
since growth is related to learning, as well as to the
external world, each stage of the child's growth has its
own characteristics and has its own readiness for certain
subjects, as well as certain ability for understanding.

As Rousseau expresses it:

La nature veut que les enfants soient enfants
avant que d'être hommes. Si nous voulons per-
vertir cet ordre, nous produirons des fruits
précoces quin'auront ni, maturité ni saveur, et
ne tarderont pas à se corrompre: nous durons
de jeunes docteurs et de vieux enfants. L'en-
fance a des manières de voir, de penser, de
sentir, qui tui sont propres; rien n'est mains
sense que d'y voulair substituer les notres; et
j'aurais autant exiger qu'un enfant eut cinq
pieds de hout, que du jugement a dix ans. En
Rousseau in the foregoing quotation expressed the fact that a period of childhood exists and should be studied as childhood, not as a development toward manhood. Nature intends the child to be a child before adulthood, but ignorant parents judge the child in the light of their own state of life. Parents expect the child to conduct himself in the same manner that they behave as adults. They are ignorant of the fact that childhood has its own methods of seeing, thinking, and feeling.

At this point the need of a psychological basis in Rousseau's writing is manifested. He advocated that the teacher should treat the child as his age demands. The newborn child needs stretching to move his limbs. Parents prevent him from moving his limbs, in stretching his limbs. Parents hasten the child's movement instead of giving him an opportunity to develop himself naturally. The best method of education of newborn babies would be liberty — liberty for movement and self-development. The best methods in the earliest education would be habituating the child to cultivate his senses and accustoming him to observing new objects. Games and well chosen recreation in a well directed experiment will play a part in the young boy's

---

education. Rousseau, following Locke, advocated that no lesson would be given verbally. The child ought to receive no lesson except through experience. As he said:

"Il faut parler Lant que ce qu'on ne sauroit faire."

Et sauvenez vous qu'en toute chase vos leoons doivent etre plus en actions qu'en discours; car les enfants oublissent aisement ce qu'ils ont dit et ce qu'on leur a dit, mais non pas ce aux' ils ont fait et ce aux'on leur a fait.

In opposition to Locke, Rousseau did not believe that children are reasoning creatures. He believed that youngsters are feeling, sensitive creatures before becoming reasoning ones. Therefore, on the psychological principle of readiness, reasoning should begin only when the child is mature enough but feelings would be cultivated from birth.

Before attempting to educate the young boy between the age of five and twelve years, Rousseau, again for the effectiveness to teaching, required a careful study of the child's language. This was in order that the teacher would be better able to properly communicate with him. Any circumstance, according to Rousseau, was an opportunity for educating the child. The teacher has to take familiar circumstances as starting points and guide the child. For example, from a desire of planting in the garden of a

14 Ibid., p. 201.
15 Ibid., p. 88.
neighbor, the child may learn the idea of respecting other's property. In order that the lessons be pleasant, Locke proposed teaching reading by means of dice. Rousseau, however, admired Locke's view, but considered it as a mistake. Then he pointed out that there exists in the children a better thing than all these devices; that is, the desire to learn:

On se fait une grande affaire de chercher les meilleures méthodes d'apprendre à lire; on invente des bureaux, des cartes; on fait de la Chambre d'un enfant un atelier d'imprimerie. Locke veut qu'il apprenne à lire avec des dés. Ne voila-t-il pas une invention bien trouvée? Quelle pitié! Un moyen plus sûr que tous ceux-la, et celui qu'on oublie toujours, est le désir d'apprendre. Donnez à l'enfant ce désir, puis laissez la vos bureaux et vos dés: toute méthode lui sera bonne.16

In short, learning starts from birth. Being human beings biologically involves growth; growth starts from the inner drives; inner drives are the spring of activities; activities need freedom; freedom should be regulated through discipline; discipline is a process of experience in nature. Learning also is based upon the child's understanding of his weakness in his relation to adults; that is knowing himself. Nature is the child's first teacher and develops him physically. Senses are his best instrument of transferring objects of nature into ideas and opportunity (using

time) is the best assistant to his thinking and finding
the relation of ideas.

Adults are his second teacher. Adults should know
the psychological principles of treating the child. They
should know the child's language. They ought to love the
child and regulate the child's freedom. Activities and
experience, observation and practice are the best ways of
being educated. These ways should be graded logically
up to the point that the child would know himself, his
environment and to use his surrounding objects.
CHAPTER VIII

THE CONTRIBUTIONS OF MODERN EDUCATORS
(CONTINUED)

I. PESTALOZZI'S CONTRIBUTIONS

Before noting the contribution of Pestalozzi to educational methods, it should be noticed that David Hume* (1711-1776) wrote his great book An Inquiry Concerning Human Understanding in the year 1749. Both in his Treatise of Human Nature and in his Inquiry, Hume began with the distinction between "Impressions" and ideas. Impressions take the place of the idea of sensation of Locke and become the main source of knowledge of every man. Every simple impression has a corresponding idea. Correspondent ideas are derived from sense impressions and are the beginning of the learning process.

Hume also advanced the principle of association which was introduced by Locke. The following quotation of his An Inquiry Concerning Human Understanding indicates

---

*Hume is one of the most important among the philosophers. He developed the empirical philosophy of Locke and Berkeley. His chief philosophical works are Treatise of Human Nature and An Inquiry Concerning Human Understanding. It is in the latter book that Hume developed Locke's Empirical points of view and contributed to understanding human nature. It is also the same book which awakened Kant from his dogmatic slumber.
the importance of the principles of association in learning:

Though it be too obvious to escape observation, that different ideas are connected together; I do not find that any philosopher has attempted to enumerate or class all the principles of association; a subject, however, that seems worthy of curiosity. To me, there appears to be only three principles of connection among ideas, namely: Resemblance, Contiguity in time or place, and cause and effect.¹

Pestalozzi² (1746-1786) accepted the above mentioned principles as essential to the art of instruction of education and pointed out:

Man, I said, in this account, becomes man only through the Art (the art of Instruction or education); but however far this guide created by ourselves goes, it must always be united with the simple course of Nature. Whatever it does, and however boldly it may lift us above the condition and even the privileges of our animal nature, yet it cannot add a hair's breadth to the spirit of that form through which our race is raised from confused sense-impressions to clear ideas. And it ought not. It fulfills its end—our ennobling—essentially in this only, that it develops us in this and in no other form; and so soon as it


²Pestalozzi, a devoted man, dedicated his life to a profession holy enough to satisfy his great personality. He was the father of the modern elementary schools. He practiced what Comenius, Locke, and Rousseau stated and contributed the principle of individuality to educational principles. He was a humanist and human. He wrote quite a number of books in other fields besides education. He did everything for the welfare of others and nothing for himself. He was an altruist.
tries another way it throws us back into that inhuman state out of which it is destined by the Creator of our nature to raise us. 2

According to Pestalozzi, the simple course of nature would be the foundation of the art of education. The means for the development of the child is limited essentially to this: a child on his coming to this world is surrounded with physical facts. Nature puts before him these facts over a wide and confused area. The child receives the confused, unorganized sense-impressions which provide a confused basis for a confused knowledge. To avoid a confused knowledge, the first part of education will become a psychological process of grading and putting together these facts in narrower bounds and in regular sequence and bringing nearer to the child's senses what nature has put before him.

The physical objects surrounding the child would determine the kind of sense-impressions that he receives. These sense-impressions, by following the psychological mechanical laws, should be raised to clear ideas, which are the objects of knowledge.

The child has some natural needs which stimulate his activities and guide him toward learning.

Finally the child has relationships with others.

This relationship regulates the child's freedom and widens his observation and eventually raises that observation to forethought.

The problem which Pestalozzi faced was the unharmonious conditions under which the child is living. He tried to bring the elements of every condition (art) into harmony with the very nature of the mind by psycho-analyzing the Art of Education.

Following the contribution of British Empiricism and Rousseau's ideas, Pestalozzi found that all knowledge of man is derived from sense-impressions and that the method which strengthened the influence of nature in developing the child in intelligence energy and virtue would be speech, drawing, writing, reckoning and measuring. Pestalozzi traced all these elements of human art to their origins which were objects of sense and reflection to Locke, ideas to Rousseau and sense-impression to Hume.

Therefore, before uttering any sound, Pestalozzi pointed out that the child gained experience from objects before him. Beginning with the objects, the child stored up a sense-impression vocabulary. For instance, the child feels that pebbles and trees have different properties and that they in turn are different from glass. The mother should arrange these primary objects according to their order of merit so that the body could produce a series of
sensations capable of developing the right impressions.

The child through the senses builds up a series of sense-impressions. However, he has but a dim-consciousness about his environment. Through the development of his organ of speech, which is based upon natural development, the child learns how to speak. The mother helps to make the child's dim consciousness clear. A good mother, according to Pestalozzi, is one who teaches the child the name of those objects which he knows. He advocated that mothers should know the principles of association in order to help the child to connect his speech with his knowledge and extend his knowledge through speech. Through the process of observing and associating, the mother helps the child to develop his sense-impressions and change his sense-impressions into clear ideas and as a result obtain a clear consciousness.

The method Pestalozzi employed in his school was derived from the foregoing principle; joining the knowledge of a thing to the name of the thing. Pestalozzi always tried to let objects proceed sense-impressions, and definite knowledge judgment. In other words, he practically led the child to get the sense-impression through the relation of senses with the physical facts and then gave his pupil the opportunity to express these impressions through words. Through this natural process of learning, Pestalozzi led his pupil to abstract all physical generalization from
separate physical facts and substitute the achieved physical generalization for metaphysical generalization with which the teachers of his time began to teach. Pestalozzi considered these processes of impression, expression, abstraction and generalization as the foundation of human knowledge. Not until after these foundations were laid and secure did the child begin the abstract work of studying from books.

Pestalozzi also used the principle of logic of going from the simple to the complex as well as from concrete to abstract. For instance, in teaching the child how to read, before the child can recognize the forms of letters by sight and before the child began to make the articulate sounds, Pestalozzi repeated the rote forms of all syllables carefully and often in order that the child could imitate easily and distinctly. When this was done, he led the child to see single letters first, then two or three together. Through guiding the child to look at the letters while he was learning, Pestalozzi made the lesson easy and was awakening the principle of associations. When the orders through association were fixed in the child's memory, Pestalozzi would pronounce two, three and four together. After the child was able to form and pronounce the word with ease, the syllables were shown to him. The syllables were pronounced by the child until he felt which letter belonged to what syllable.
Pestalozzi through numbering the syllables led the child to the point of perfection of syllable learning. Through changing the letters of a word, taking one or few letters away, and dividing the words into syllables, Pestalozzi strengthened the observation of the child. Through strengthening the child's observation, Pestalozzi increased the child's ability and that increased power enabled the child to rearrange the very hardest words by himself.

By this method, Pestalozzi was establishing the connection between objects and words and developing the child's organ of speech through exercise so that he could pronounce the hardest words easily. Accomplishing the principles of reading, Pestalozzi taught the child a vocabulary related to the child's sense-impressions by means of a dictionary. The specimens of samples, grammatical additions and classification of words were the next steps in language teaching.

According to Pestalozzi writing was a kind of linear drawing. Therefore, he led the child to begin with drawing before thinking of writing. He believed that nature endowed the child with the ability to draw and that the child could possibly, in two years, be able to guide well that delicate instrument, the pen. Since drawing is based on the principle of angles, parallels, and arcs, it forms a
natural basis for a foundation in writing.

In teaching arithmetic, Pestalozzi, following the principle of objectivity, began with a few or more real objects and led the child from sense-impressions to symbols and from symbols to abstract ideas. For instance, first he used real objects, then a group of dots and finally the numbers.

It is evident from the foregoing discussion of the contribution of Pestalozzi to educational methods that he followed in elementary instruction the mechanical-laws by which nature is bound to the child.

Since nature was bound to rise step by step from a simple beginning, so the objects of learning should be graded and presented to the child. In order that the systematic training would be effective the needs and interests of the child would be taken into consideration, because the child's need is the center of his activity and activity is essential in learning. Since the unessential elements are subordinated to the essential ones, the teacher ought to guide the child to learn essentials of learning in order to become independent in learning. Every new idea should be almost an imperceptible addition to what the child previously has learned. Articulation between previous experience and the new ones should be established and until perfection of the simpler has been achieved the child must
not start complex ideas. Pestalozzi through this objective method, hinging upon philosophical and psychological principles of objectivity and the nature of the child, as well as the nature of learning, revolutionized the modern elementary schools. It was through this method that Pestalozzi led his pupils as early as possible to stand on their feet, to think independently and judge freely.

Pestalozzi also advocated education through activity in order to train the hands. Through projects which involved activities and the use of hands, he added to his principle of objectivity the theory of educational establishments combining with workshops. He believed that through such educational establishments combined with workshops, and conducted on a psychological basis, a generation could be formed which would show by experience that individuals are able to stand on their feet and be self-sufficient. This practice also assisted the harmonious conditions which are the ultimate conditions of education.

Concerning the child's relation with other members of society, Pestalozzi contributed the principle of individuality.

In advocacy of the Naturalism of Rousseau who raised the voice of "returning to nature" to human nature and to child nature, Pestalozzi went deeper than his predecessor in his ideas concerning the nature of the child. By limiting
the principle of freedom of Rousseau, Pestalozzi placed the child in his natural environment, the home, instead of an imaginary life isolated from social environment as Rousseau advocated. Pestalozzi, therefore, considered the home as the proper place to develop character in the child. He emphasized that nature has inspired the child with trust in his mother. This trust cultivates in the child a willing obedience, within the limits of which the child would acquire those habits which will make the duties of life easier.

As the child is cared for by the mother, as he is pleased by her, as his needs are satisfied by her, as he is fed by her, protected by her and as he is helped by his mother, the germ of love is developed in the child. In the same way, through experiences which come from circumstances the germ of trust and gratitude, of human love and of brotherly affection, are developed in the child. The development of these inner feelings guides the child towards the love of God. The mother or teacher should realize the physical causes of the germination of these feelings in the child and do everything to bring about a method of stimulating these qualities in order that the world might attract the growing child only in connection with these qualities. Therefore, Pestalozzi, following Rousseau, attested that the first instruction of the child after the cultivation of senses should be the development of the affections and the mother is the only one who has the natural ability of
cultivating them. Pestalozzi believed that human education goes from the exercise of senses to the exercise of judgment. Therefore, before reason is developed the heart should be developed and this development should be on the basis of natural laws.

Consequently through the objective method, Pestalozzi would bring up a self-sufficient individual in relation to the physical world and through the natural instructions of the mother, he would develop an individual who was moral in his relation to others.

II. THE CONTRIBUTIONS OF HERBART TO EDUCATIONAL METHODS

Johann Friedrich Herbart* (1776-1841) began to work out his own system of thought while in the University of Jena. As Pestalozzi and Rousseau were influenced by the British Empiricism, Herbart was nourished from the source of the great German philosopher, Immanuel Kant. Herbart endeavored to clear away all the one-sided, dogmatic views

*Herbart was reared by a rare and remarkable woman. He became a student of Fichte under whom he produced incisive critiques upon the philosophy of idealism. He worked as a private tutor and thus obtained real experience in pedagogy. While in Switzerland, he met Pestalozzi and was attracted to him. He taught at the University of Konigberg as the successor of the illustrious Immanuel Kant. There he developed his educational theory. In Gottingen he published his Outlines of Pedagogical Lectures and his Outlines of General Pedagogy. He died in the year 1841 at the height of his reputation.
of preceding educators as Kant had endeavored to do in philosophy.

Herberts philosophie ist in ihren hauptszenen aus einer grullichen Revision von Kants System und dessen voraussetzungen her vorgangenen. Vor allem ist es der Kritische Geist, der sich von Kant auf Herbert vererbt hat. Er pruft auch die psychologischen voraussetzungen Kants, die Letzterer als gegebene Wahrheiten annahm. Ist Fichte von Kant ausgehen in einem subjektiven idealismus gelandet, so endet Herbert, der clurch, dies en idealismus hindurchgeht und ihn als un haltbar nachzuweisen sucht, im vernunftiger Realismus.

In opposition to empirical psychology, Herbert used his analytical psychology as a basis for a scientific education. The new departure that Herbert made from his predecessors was in the field of psychology. He dispersed the ghost of faculty psychology which had been attributed to the soul. With Herbert, it was an error to look upon the soul as an aggregate of all sorts of faculties. However, he did not give an answer to what the soul is in its essence, but he considered it as a simple essence without any kind of multiplicity. In this way he departed from Locke and followed Kant philosophically and considered the soul as a mathematical point or as Kant called it, "Ding an-sich." Herbert believed that the soul has one original

---

power — reaction to external stimuli. By this power ideas constitute the primary part of the soul. Ideas or mind atoms are the element of understanding. Feeling and volition are the outcome of the relations of ideas. Feeling and volition are called secondary states which result from the counter reactions of ideas. Therefore, feeling and volition have their source in the mind and are changeable conditions.

On this basis, Herbart agreed with his predecessors that the main purpose of education is the formation of character, but he stressed that instruction would be the chief means for attaining character building. Character building is related to volition. Volition, as previously stated, would result from the relation of ideas. Therefore, as a conclusion, according to Herbart, the ultimate aim of education is tending to the enrichment of ideas and systematization of ideas.

However, ideas constitute the primary part of the soul through its only original power, that is, reaction to the external stimuli. As soon as the ideas came to existence in mind, they would be in series and would work under a mechanical law in which the soul has no power.

As said before, ideas would be in series similar to a chain. The main job of instruction is to systematize these ideas and through the clear ones bring the new ones into evidence. Through past experience the pupil should
be guided to strive for mastery on the new experience. In the light of the known ideas, unknown ideas would become known to the pupil. This is the main psychological contribution of Herbart and is known as apperception.

Herbart believed that there were two sources of ideas. The first source would be the experience of the objective world, and the second one would be human intercourse. From the empirical, the speculative and the aesthetic interests, and from the latter the sympathetic, social and the religious interests would be developed.

According to Herbart, the main task of a good teacher would be the development of these six interests.

Through the development of these many-sided interest, harmoniously accomplished, the child, possessing a coherent circle of thought, should be educated. In order to modify the child from the stage of personality, known as egotism, to the higher stage of personality, known as altruism, the teacher should take the apperceptive ability of the child as a guide post and move in all these six directions. While directing the pupil's interests toward that interest which is the end of education, the teacher, in his teaching, always should follow the gradual progress of interest through motivation. Therefore, in transferring the best element of the culture, the teacher should not only know the apperceptive ability of the child, which helps to arouse interest, but also needs to motivate
constantly. The best and the easiest way of motivating would be grafting the new interests upon the already existed ones. Without arousing interest teaching would be worthless and even injurious to pupils.

Herbart also believed in the principle of self-activity and was of the opinion that constant self-activity is based upon interests. Sometimes he would overestimate his point regarding the principle of self-activity and would make it identical with interests. As there would be many-sided interests, without doubt, learning involved many-sided activities and the teacher would be responsible to provide many-sided activities selected on the basis of the principle of apperception. With Herbart, interests were not only the source of self-activities, but also the foundation of another source of learning — that is, attention. Attention primarily, depends upon the strength of the sense impression. As a result, there is also a primary need of cultivating the senses and helping the child to receive the right sense-impression through self-activity. The cultivation of senses, the provision of the systematized objects, and the primary rise of interest would help in the receiving of right ideas and the systematization of these ideas according to the principle of apperception.

Systematization of the pupil's ideas and the enrichment of the student's right way of thinking are
primarily based upon their methodical treatment by the teacher. The need of a methodical treatment guided Herbart to the organization of the steps of teaching.

Herbart, in the process of instruction, distinguished three phases. The first one is called purely representative; the second, analytic; and the third, synthetic.

Representative method aims to extend the pupil's range of actual experience. Following the basic contribution of his predecessors, Herbart perceived a need of sequence in concrete materials. Following the idea of sequentiation of the facts, the teacher would make the pupil realize that from events and objects they receive a systematic form of series of ideas of things. This is accomplished through the power of his soul. The series of ideas of things first must be clear. The only way to make them clear is through the cultivation of the senses and the reception of the right sense-impressions under the right conditions. This step, according to Herbart, is called presentation.

The pupil gathers a series of ideas from his contact with the physical world. The teacher should organize these ideas according to the principle of apperception, which facilitates learning and associates ideas with other ideas. This way, the old ideas, belonging to previous experience, would help in the manner in which the pupil receives the problem. In other words, Herbart believed
that presentation would be followed by a reproducing of the past experience through an analytic approach. This is now considered the main step among the steps of teaching, and Herbart emphasized it. The art of teaching is essentially based upon knitting the new ideas to the old ones through this step which is comparison.

After associating the series of old ideas with those of new ones, Herbart believed that the main facts of a given whole, their usage, relations and attributes should be pointed out. Through the function of synthesis, the pupil develops his reasoning, his power of judgment, and his mental structure and gains a generalization of all the series of ideas.

Consequently, the pupil must make the new ideas into a living knowledge by practical application — probably through assignments by the teacher and the exercise of the learner.  

Concerning the broad problem of method, Herbart believed that discipline should complete the work of

*T. Ziller (1817-1832) developed the pedagogy of Herbart and applied it to the practice of teaching. Although V. Stoy contributed to the progress of Herbart's theory of pedagogy, it was Ziller who added the step of preparation to the formal steps of teaching; introduced unity and harmony into education by the doctrines of culture stage and concentration center. This doctrine of the concentration center could be taken as the starting point and the foundation of the unit approach to the teaching-learning process.
instruction through the habituation of the volition of
the pupil in the direction of virtue.

III. CONTRIBUTION OF FROEBEL* TO
EDUCATIONAL METHODS

While Comenius, however an originator, was influenc-
ed by Francis Bacon, Rousseau by the Locke's contribution,
Pestalozzi by Rousseau's Emile, Herbart, philosophically
by Kant, and pedagogically by Pestalozzi, Froebel was a
combined product of the philosophy of Comenius, educational
practices of Pestalozzi, the mystical contemplation of his
own life and the development of science of his time.
Philosophically, Froebel accepted the principle of identity;
a system of philosophy in which both subjective and objective
worlds are identified in one principle. According to this
philosophy, in all organic and inorganic things there
reigns an eternal law. The metaphysical reality and the
human ideal, according to this doctrine, become an eternal
unity. This eternal unity is God and all controlling law
is necessarily based on this eternal unity. God is the sole

---

*Froebel (1782-1852) was born into a pious and
religious family. He lost his mother some four months
after birth. He grew up under unceasing self-contempla-
tion, self-analysis and self-education. Later, he built
up a life of nature in which he developed his mystical
philosophy. Froebel founded the kindergarten and contrib-
buted both to educational theories and practice.
source of all things. Therefore, man possesses the
divine essence. This divine essence in man makes him a
manifestation of the divine spirit in a human form. Thus,
each individual child was considered and treated, by Froebel,
as a manifestation of the divine spirit. This Divinity in the nature of the child brought about the principle
of acceptance of the child as a potential youth. The
destiny of a child, therefore, would be unity with God.
Unity with God involves making peace with nature and in
one's own self through clearness. This clearness would be
the result of bringing out, lifting into consciousness and
unfolding that divine essence of man. This is the task of
education and its outcome would make man raise himself into
free, conscious obedience of his divine being, and, there­
fore, would become the free representation of the divine
principle in his life.

The child, because of the endowment of that inner
essence, possesses powers which are derived from that
inner essence. He has a germ of evolution. Through the
development of that germ, the child should be guided to
his divine destiny. The child is considered as a success­
sive and progressive individual who should pass through
the stages of culture as a member of the family and humanity.
The same inner essence of the child brings about his in­
fancy as the externalization of the child's internal world
and his boyhood as the internalization of the external
world.

The externalization of the internal world began with the fact that the eyes of consciousness have not yet opened for the child. His senses and limbs are the avenues by which he tries to express himself and to determine his nature and its relation to external objects. Due to nature and his inner powers, the child is really concerned about his organs and the use of the members of his body. The child begins with playing with his physical organs. He puts his fingers into his mouth, he plays with his lips, he uses his hands, he expresses himself through his eyes and face, and plays with his feet as well as uses his tongue.

In opposition to Rousseau, who developed the stages in the child's life somewhat like a succession of changes and who believed in a passive education for the first stage of life, Froebel looked upon the infancy of each child as a gradual unfolding of the organism and believed that during infancy the main task of instruction should start. The teacher should take advantage of the expressive members of the child's body and offer him various objects to secure occupation for the senses and mind. The child in accord with his nature would like to be active all the time. Out of this natural ability, Froebel derived his principle of self-activity. On this ground, he instructed
the mother and the teacher, as well as the nurse, to recognize that activity should enlist all of the phases of child development. Thus the law of activity demanded not activity alone, but all-around activity of the whole being, the whole-self. Here Froebel, in making a comparison with plants that they grew in space and time, would call the attention of parents to the necessity of protecting their children instead of prescription and interference. He advocated that in accordance with the infant's inner powers and laws of divine influence, as well as in view of the original soundness of the nature of man, all prescriptive and interfering education should be omitted. On the other hand, the mothers or nurses should allow nature to take its course. Thus, one often takes the right road. For the eternal divine principle in the child and nature itself demand and require free self-activity and self-determination on the part of man. For the man is created for freedom and in the image of God. Therefore, the period of infancy would be respected, freedom provided, and objects offered in order that the child externalize his internal world through self-activity and self-determination. He should be protected, however, and though most of his actions are imitative, they should be guided to the unity of God.

Froebel agreed that as soon as the activity of the senses and the limbs is developed to such a degree that the
child is enabled to begin self-activity, the stage of childhood begins. The development of speech is taken as another mark of the beginning of childhood. Speech is considered by Froebel as the means of the immediate expression of the child. With Froebel, mental education would begin with speech. In order that the child express himself thoroughly and correctly, it would be the responsibility of the teacher to let the child observe the external objects accurately and rightly, clearly and precisely. The child should be guided to apply to things their names. With the development of speech the child begins to internalize the external words. The teacher would guide him in identification of the words and objects by association.

Froebel is remembered for having found the relationship existing between nature and play to education. Play was another means of expression. Play, according to Froebel, also was the cornerstone of kindergarten. The play of children often had very deep meaning and was taken as the first creative utterance of man. Play should be regulated and lead gradually to work. In his "Gifts and Occupations,"* Froebel showed how both may be combined and

*Froebel in his pedagogik de kindergarten, advocated a series of six gifts consisting of the spheres, and cubes, cylinders, ball, cradle song, the equally divided of the cube and movement play; and occupations applied to these gifts. According to Froebel gifts and occupations are connected together in educational use. They are the most original materials of the kindergarten.
as a result how the child could secure enjoyments through the same effort. Playing involved playthings such as balls, cubes, and cylinders. These objects are the symbols of ultimate unity.

His gifts were chosen with great care and wisdom to suit the unfolding consciousness of the child, to fill it with new conceptions suitable to its advancement, and to aid it in its artistic, mathematical, and simple constructive development. The occupations give productive employment to the child, and develops its inventive power, its artistic ability, and its constructive power; in short, they provide means of expression for the child's original conceptions, and reveal its inner powers to itself and its teachers. 4

These objects also give the true knowledge and the bare facts to the child. Self knowledge through playing and playthings would be developed in the child. By means of play and giving incentive, as well as materials freely to the child, he would develop through exercise according to the whole of his powers and talents in a manner suited to his stage of life and culture.

Thus, play and speech would constitute the elements of the child's education. He animates the whole world, organic and inorganic, with the child's newly awakened soul, full of self expressing activity. The child thus imparts to each thing feeling and speech. He could pour

out his inner being on everything, pebbles, chips of wood, and even a plant. The mother and teacher ought to take advantage of the child's interest and self activity and guide him towards his destiny.

Froebel considered drawing as another means of self-expression. The ability to draw is taken, by him, as an innate ability. When given the materials for drawing, for instance a piece of chalk, the child begins his activities. The outcome of his self-activity would be the child's self-expression which will stand before him and the teacher. Through the use of measurement, drawing has opened a new world in a new direction to the child. Thus, the child comprehends the new world better through his eyes. Through drawing and his self-expression, the child internalized the external world. He would comprehend the concept of forms and the representing of the forms independently. The fixing of such forms thus strengthens the arms and hands while he increases his knowledge and makes progress.

Mathematics was looked upon, by Froebel, as the expression of life and life should be studied with its help. Therefore, the conception of numbers should be taught through the familiarity with objects rather than through an abstract form. The method of discovery should be used and drawing should be taken as the guide post for
the discovery of numbers. The cultivation of knowledge through the methods of self-activity, self-expression, self-development, self-determination, and self-construction as well as the use of play, would be based on the principle of acceptance by the child, the principle of evolution, and the principle of inner-divine. These activities help in the formation of the will of the child.

To quicken the will, to make it pure, strong and enduring, Froebel pointed out that the starting points of all activities for the child should be energetic and the objects should be clear and worthy -- worthy to the essential nature of the child and his tendencies to develop it. The center of the development of the will of the child is found in the heart. Instruction should be from the will but it must touch a good, pure heart. The heart would become pure through the complete enjoyment of play and participation in the domestic life.

In opposition to Rousseau, who looked upon the first period of life as the physical stage where education should be entirely through nature and of a negative type, Froebel saw plenty of opportunity for the child to cooperate with nature. Froebel corrected the emphasis which Rousseau put on wild nature and advocated that children become God-like only through participation in domestic affairs, in industry, and in working and doing.
Consequently, Froebel, considered the child as a member of the human race. Thus the child should be viewed and treated in his obvious and living relations to the present, past and future. Opposing Rousseau, who sacrificed the present for the sake of the future, Froebel made it clear that the perfect fulfillment of the present guarantees the future. Since the child possesses the evolutionary germ within him, and since the aim of the child is infinite and eternal, the child would ascend through the various stages of culture. This evolution should not take place through the limitative method but through the constructive method, by not telling but by discovering, not prescriptive but protective, not by interference but by guidance, not adult activity but child activity, not through putting in but bringing out, and should not be impressive but should be expressive. The device to encourage this evolution, which takes its root from infancy and develops through manhood, would be play. Play releases the child's inner powers which demand freedom. Freedom should not be bestowed but must be achieved by self-activity. Objects should be handed to the child but their mystic relation to the unity of God should be guiled.

It should be noted that the contribution of these great educators in the light of Darwinism and the progress
of psychology became a transition period for social experimentation in the field of education. On the bases of these contributions, the Dalton plan, Dewey's ideas, and Morisson's unit teaching were developed.
CHAPTER IX

CONCLUSION

An analytical study of the contributions which were made by the various members of the human race, through the history of the progress of man in general and the history of education specifically, indicates three major periods: (1) the period which considered learners as miniature adults, (2) the age which recognized the difference between childhood and manhood or the time of Rousseau, and (3) the time of individual differences or the age of Thorndike.

Such a division is not based upon duration at all. There is no accepted dividing line for the end of the first period and the starting of the second period. These divisions are essentially based upon the development of method throughout history. In an historical epoch there may exist all three kinds. The writer often feels that during his studies he has been trained on the basis of the principles of all these periods. This important fact has been due to the lack of enough well-trained teachers as well as to the level of conscience of community, home, school, and political organization.

As the distinct point between the first period and the second centers around Rousseau's *Emile* and individual
differences were introduced by Thorndike, the writer accepted Rousseau's contribution as theoretically the end of the first period and the contribution made by Thorndike as the beginning of the third period.

The first period in which the child is considered as a miniature adult is characterized by religious bias, an essentialistic system of philosophy, authoritarian types of government, a limited knowledge of biology, and a weak understanding of psychology. Philosophy of this period supported itself with religious doctrine and, therefore, gave a dual speculation to the nature of man. It was felt that man's mind was from a great reservoir of primitival mind and a true world of unchanging reality. His body was thought to be a handicap to his mind and his senses were susceptible to error. From this it followed that proper education concerned mental development. On the basis of faculty psychology or lack of psychology, the memory should be developed by repetition, and subject matter should be learned under any circumstance, regardless of its practical use. Knowledge was the end of education and its articulation to life was poor. The teaching methods employed in this period were the outcome of the philosophy backing up the aim of the education in the period. Without doubt that philosophy was the outcome of the state of life of the community and the social-consciousness of the group. The main methods contributed by the exponents of
this educational philosophy were: direct and indirect imitation, trial and error, personal experience, collective experience, play, precept, regulation, command, duty, fear, participation, and observation in primitive societies. Discrimination, religious indoctrination, memorization, verbal-teaching, recitation, drill, oral dictation, exposition disputation, actual participation, bookish methods, training of reason, syllogistic reasoning, lecturing, copying, reproducing, conferences, meditation, reasoning, self-inspection, concentration, devotion, psychic-control, public contests, reflection, oratory, and the method of analysis were added during the agricultural, non-scientific stage. These methods certainly were not systematic enough. Learning was a task for the child and teaching methods were most narrow and, were merely the outcome of personal opinion.

The second period in the development of methods of teaching started with the recognition of the significance of the rights of children, with the writing of Rousseau's *Emile*. Rousseau was neither a psychologist nor a practicing educator, but his *Emile* is so effectively written that its reading still acquaints teachers with the importance of childhood. *Emile* gave to education a concept — that a period of childhood exists and that it should be studied as childhood, not as a development toward manhood. This is such a magnificent contribution that the writer has taken him as the beginning of a distinct period. However,
before the birth of Rousseau, ancient educators had accepted this concept and great teachers of previous ages taught the child from this point of view.

The period Rousseau initiated was characterized philosophically by empiricism and rationalism, psychologically by associationism, politically by contrast between nations and government, scientifically by improvement of biology and other sciences, and educationally by a great desire for universal training. The ways of acquiring knowledge were systematized and authorized by the philosophers. The nature of the child was studied more carefully than in the first period. The importance of nature and the laws of nature were investigated by both educators and scientists. Still there existed a lack of knowledge concerning transferring knowledge. In other words, there was not a sound psychological basis for learning.

In time these factors gave way to some far advanced methods of teaching and learning. The outstanding ones were: the method of discovery, the method of induction, objective method, activity method, emulation and rivalry method, method of conversation, dialectic-method, method of individualization, practice, motivation through interest, self-expression, self-activity, pleasurable and attractive methods of learning, recognition of natural laws underlying teaching, sense-training, and the natural method based upon the principle of simple to complex and concrete to abstract.
In this period love motivated the child, fear and punishment diminished. External effort gave its place to internal effort aroused by "interest." Discipline became mild. It was based upon reason, or natural punishment.

The progress which was made in this period in the methodology of education was important. This period contributed the principal laws of thinking, the principal laws of learning—teaching and made the child the center of educational investigations.

The third period began with the discovery of individual differences, started by Galton* (1822-1911) and emphasized and brought to the point of understanding by Thorndike (1874-1949). This period is characterized by critical realism and pragmatic philosophy, education as a science, the effect of Darwinism on biological interpretation, Gestalt psychology and the pragmatic theory of learning, psychoanalysis as well as measurement and evaluation, and by statistical methods and professional teachers.

The outcome of the progress in the fields of educational biology, psychology, and philosophy contributed the

---

*Sir Francis Galton was born in 1822. He was interested in biology until he achieved fame as a geneticist. He studied particularly the effects of heredity and environment upon the development of mental abilities. This study led him to experimental psychology and as a result contributed to the field of measurement. His contribution is known as "Galton Whistle." He also suggested devices to be used for testing the senses.
following progressive methods of teaching: method on the basis of apperception, method of example, systematic observation and experimentation, adaptation of teaching to individual differences, learning by doing, the laboratory method, child-centered procedures, techniques concerned with growth and nature of the child, the five formal steps developed by the Herbartians, teaching according to principle of activity and the principle of socialization, teaching on the basis of quantitative measurement and statistical manipulation, problem solving methods, guidance methods instead of domination methods, unit-teaching and learning (teaching the child as a whole—that is, accepting the theory that the child being an organism learns physically, emotionally, socially, and mentally), project-method of teaching, pupil planning (stimulated by teacher, initiated, organized, and evaluated by pupil), teaching on the basis of stimulus-response bond known as S-R, which is derived from the neural basis of thinking, and consequently, scientifically determined teaching methods. Although the continuity of thought could be comprehended during the history of the progress of methods, the lack of able teachers and proper facilities caused the practical development of educational methods to be irregular. On the same basis, it should be noted that the method of Socrates and that of Christ would be correlative outcomes of the third period;
the method of Confucius, Isocrates and that of Quintilian would be correlative to the second period; and some of the present-teaching, to the first period.

An over-all look at these methods reveals them as partially true and occasionally useful in certain teaching-learning situations. Certainly, the method of discovery is far superior to that of imitation, but willingly or unwillingly, so long as the child naturally possesses a prolonged childhood and as long as he is associated with adults, he quite naturally imitates adult behavior. The significance of imitation to the teacher of the twentieth century is perhaps not the same as it was to the primitive instructors, but the child of the most progressive time and the child of the most primitive society would learn something through imitation. Naturally, or perhaps instinctively, the child loves to play. In early times the child engaged in a longer-termed and more unsystematic kind of play. Today the child learns in a shorter time under a systematic, organized play. This is a rather simple illustration of the fact that the progress of man in learning has been in terms of going from unplanned to planned, unsystematic to systematic, unconscious to conscious and from trial and error to the scientific method.

It was mentioned previously that a method of education is a pathway between an aim and a principle, which
applies a series of acts in going along that pathway. A principle of educational method would be based upon a system of philosophy. The aim of education centered around the child and this child-centered education would be based on psychological and biological principles as well as sociological ones. The series of acts which goes through the processes of method demand logical arrangement. Therefore, the step from unplanned teaching to planned, from unsystematic learning to systematic, and consequently from the trial-error way of thinking to the scientific method, has been due to the degree of the reality of the system of philosophy, development of psychology, progress in biology, and the invention of means.

For instance, with the rise of philosophy in the seventeenth century, the principles of the mind's operation became known, the steps of thinking introduced, and as a result, the more significant methods of learning came into the picture. With the development of psychology and biology in the following centuries, the laws of learning and the laws of transferring knowledge were founded on a sound basis.

This continuous progress should be taken as a foundation of the teaching-learning method and be developed on the basis of individual differences.
BIBLIOGRAPHY


AUTOBIOGRAPHY

Abdolreza Arasteh was born in Shiraz, Iran, September 10, 1926. He received his elementary education in Soltani High School from which he was graduated in June, 1943. He later attended Shiraz Normal School receiving from that institution a diploma in June, 1945.

Having ranked among the first five students of the Normal school, he was permitted, in September, 1945, to attend the teachers' training college from which he received the degree of License in Foreign Languages and was awarded a high school teaching certificate in June, 1949. He entered the teaching profession while continuing further studies in the Department of Philosophy and Educational Sciences in Tehran University from which he received the degree of Licence in Philosophy and Educational Sciences in August, 1951. In the fulfillment of his last degree he submitted a thesis, "A Research on George Berkeley's Philosophy and the Translation of Three Dialogues, Between Hylas and Philonus," which won him the annual prize awarded by the department, an amount of $200. At Louisiana State University, he began work in September, 1951, toward a Ph.D. degree.
EXAMINATION AND THESIS REPORT

Candidate: Abdolreza Arasteh

Major Field: Education

Title of Thesis: Foundations of Modern Educational Method

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:
July 28, 1953