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Historical Development and Application of the Conceptual Approach in Teaching

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Contemporary American educators are expected to develop children's ability to think creatively. Unfortunately, many have understood "creative" and "creatively" as synonymous terms. In my opinion, healthy human beings are born with an ability to be creative. Using old knowledge and adding new knowledge to adapt to a new situation is as natural as breathing. It is the way in which one survives in an everchanging environment. Being creative is innate. Behaving creatively is nurtured. In order to not only survive but also grow in a dynamic

environment, the individual must be both creative and think creatively. Thinking creatively involves solving problems in a way that is beneficial to self and society. Being creative alone does not always imply a positive force. Being creative and thinking creatively does. One can be creative and be counter productive in terms of social contributions. By definition, the adverb form, "creatively," takes on the positive meaning of productive.

Individual needs, individual worth, integrated curriculum, synthesis of affective and cognitive modes, and the whole child are additional phrases which have been misconstrued by educators. And yet, such phrases are at the heart of a conceptual approach in teaching, which is intended to make children think creatively. It is easy to understand how one can lose sight of the meaning of these terms as they are applied and interpreted through the years. Yet, if one is going to use effectively the conceptual approach in an attempt to teach children to think creatively, it is necessary to explore the core of "truth" upon which the conceptual approach is based.

In order to discover the essence of the conceptual approach I have researched persons and philosophies from the Renaissance to 20th Century America. The initial problem was to identify a historical rationale for teaching conceptually. Once a rationale is established, various applications of the conceptual approach are examined through the works of Johann Pestalozzi, Johann Herbart,

E. A. Sheldon and John Dewey. Contemporary theories on the validity and application of teaching for concepts are discussed through Jean Piaget, Chester Lawson, and Robert Ornstein. The fourth chapter is an analysis of a lesson prepared for my own 8th grade students in U.S. History.

Research revealed that the seeds of philosophy for a conceptual approach were born in the periods of the Renaissance and the Reformation. However, a method for thinking creatively was not articulated as a full-fledged ideal until the Enlightenment. The method and rationale is stated best by Sir Isaac Newton and John Locke. After studying specific educator's applications of Enlightenment philosophies, one can summarize the essence of the conceptual approach as follows. Human beings are an integral part of nature and therefore are subject to the laws of nature. The human personality is developed through sensory experience processed through a double faceted mind. Human progress is a worldly possibility not controlled by unalterable forces outside of self. Knowledge obtained through reason is the key to understanding, and therefore controlling nature and self. Mankind is capable of attaining ultimate good through individuals. Ultimate good will be reflected in a utopian society, free from external controls. Mass education is a vehicle for social reform with a moral obligation in the secular realm. Reason is the true reflection of mind which provides the model for cognitive processes in education. Knowledge is utilitarian and applicable at both the concrete and abstract levels.

It was discovered that the core of truth does not flow through historical applications intact. Often emphasis on one facet or another creates a distortion difficult to decipher. The periods in which the conceptual approach seem to wane are those times when practitioners attempting application have taken the essential ideals and distorted them beyond recognition. Fortunately there always seems to be some one or some group to spot the deficiencies and once again formulate a total conceptual system with recognizable roots in the work of Newton and Locke. Consequently, each educator discussed in the paper is not treated in equal depth, but rather according to what degree his work has infleunced the propagation of the conceptual approach in contemporary schools.

Generally speaking, my thesis addresses these problems. (1) A clear understanding of the conceptual approach is prerequisite for teaching children to think creatively. (2) The conceptual approach has been misunderstood because educators have not distinguished clearly between the terms "creative" and "creatively." (3) The conceptual approach has been misapplied because educators have lost sight of the essence of the philosophies at the heart of the method. (4) The core of truth necessary for understanding teaching for concepts can be understood by tracing philosophical thought and application of the approach from the Rennaissance to 20th Century America. (5) Inconsistencies in interpretations and applications of teaching for concepts have made it difficult for contemporary teachers to identify a single model to follow.

It is the intention of this writer to attempt to tell the story of teaching for concepts in such a way that the unifying thread of

the conceptual approach is at once recognizable and usable.

HISTORICAL DEVELOPMENT AND APPLICATION OF THE CONCEPTUAL APPROACH IN TEACHING

by

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CHAPTER I

INTRODUCTION

Modern educators recognize the importance of equipping students with the skills needed to solve problems in a rapidly changing environment. Wise teachers, however, recognize the virtual impossibility of providing a child with a specific body of knowledge which can be applied directly to every new situation that may be encountered. Consequently, they have correctly concluded that they must devise curriculum which promotes thinking creatively. Unfortunately, very often when curriculum is developed the emphasis is on "creative thinking" rather than "thinking creatively." There is an important and qualified difference between the two. "Creative thinking" is a redundant phrase. Thinking <u>is</u> a creative process. Human beings are born with the ability to think. The end result may be either positive or negative. The end result of "thinking creatively" is always positive. Some educators, for example, believe that they are encouraging children to think creatively by not correcting a child's spelling and punctuation errors for fear of crushing the creative instinct. They fail to understand that a child has a natural urge to share an idea. Spoken and written language is the medium for sharing one's thoughts. The expression of the idea is a social process. The mechanics of language provide the vehicle for communicating the idea in a manner which is most clearly understood by those with whom the environment is shared. The creative instinct is restrained not because punctuation and spelling errors are corrected, but because an idea cannot

be expressed or understood without a standard that makes the meaning clear. Thinking creatively is a dualistic proposition which implies a synthesis of a literal, mechanistic, standardized body of knowledge and an abstract, relative body of ideas. It is critical not to lose sight of the dual nature of thinking creatively. A lopsided emphasis on being creative results in large numbers of children who can neither function in the basic skills areas of reading and writing nor think creatively.

The value of the dual nature of the learning process in human experience is made clearer by tracing the historical development of the conceptual approach of teaching from its origins in the Renaissance to the 20th Century. The conceptual approach is a viable focal point, because a proper application of the conceptual approach implements the dual nature of the learning process. Teaching for concepts forces the child to think creatively. Solutions to problems are not readily available without utilizing the higher level skills defined as process in curriculum. Process skills are observing, comparing, contrasting, summarizing, and drawing conclusions.

Historical analysis is an appropriate tool for understanding the nature of the learning process. Human thought does not spring fully grown in the minds of a single individual. Rather, guiding principles of society are an accumulation of fragmented philosophies. The end result is a reflection and example of the collective thought process found in human history. Crane Brinton expresses this idea very clearly when he says,

New knowledge can, of course, be reflected back through

> the whole core, and cause what may not unfairly be called a 'revolution' in the science. Thus quantum mechanics and relativity theories have been reflected back into the core of Newtonian physics; but the work of Twentieth Century physicists has not proved Newton's work wrong...[1]

In charting philosophies which embody a conceptual approach to human learning, the reflective core of knowledge is of primary importance; that is those elements that hold steady regardless how many variations are played on them, somewhat like a good piece of jazz.

The problems encountered in isolating a single strand of thought from complex philosophical schools is not an easy task. There is no index or card catalogue to guide one to a specific page of any particular work. Consequently, it has taken a long period of time to articulate the problem to be considered in this thesis. Initial awareness of a dualistic model for human learning came for this writer while doing a comparative study of 17th and 18th Century English politics. Research revealed 17th Century religious philosophy to have a direct bearing on 18th Century liberalism. The concept that evolved out of this discovery was that there has been a certain tradition in modern western thought which has been based upon a double edged sword. The essence of the model has been a careful balance between the intuitive and analytical aspects of human thinking.

In spite of a balanced model, if one examines the history of educational thought it will be apparent that educators have tended to lose sight of the balance and move from one extreme of the model to another.

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[1]Brinton, Crane, The Shaping of Modern Thought, Prentice Hall, Inc., 1963, page 9

Recently many educators contend that children should be free to express themselves, while others argue that an appreciation for discipline in expression is essential. A possible solution is the development of curriculum that provides a balance between the two extremes.

It is the intent of this thesis to use historical analysis to illustrate the validity of a balanced model for modern curriculum. Further, it is hoped that the process will be indicative of the usefulness of historical perspective for understanding the essence of new thought.

A number of sources were especially important for this study: The Shaping of Modern Thought, by Crane Brinton; The Idea of History, by R.G. Collingwood; The Religion of Isaac Newton, by Frank E. Manuel; John Locke: Prophet of Common Sense, by M.V.C. Jeffreys; Pestalozzi: His Thought and Its Relevance Today, by Michael Heafford; Herbart and Education, by Harold B. Dunkel; Oswego: Fountainhead of Teacher Education, by Dorothy Rogers; Great Educators of Three Centuries, by Frank P. Graves; Growth of Logical Thinking From Childhood to Adolescence, by Jean Piaget and Barbel Inhelder; Brain Mechanism and Human Learning, by Chester A. Lawson, and The Nature of Human Consciousness: A Book of Readings, by Robert E. Ornstein. These works collectively trace the thread of the conceptual approach from the most abstract philosophical levels to concrete application.

The Shaping of Modern Thought and The Idea of History were excellent sources for bringing into focus the philosophies that mark the beginning of the scientific method. Both books treat historical thought from the viewpoint of specific philosophers. The first covers the

period from the Renaissance to the present. The second moves from ancient Greece to the present. By comparing and contrasting the thinking of individual philosophers each author provides material that is specific enough to allow the reader to see the continuity in historical thought. The books offer trenchent illustrations of the process involved in the creation of new ideas. One can readily identify the stages at which "accepted" knowledge is modified. Ideas change when new information is added to or subtracted from accepted "truths". Brinton's and Collingwood's books are portraits of that concept.

The Religion of Isaac Newton by Frank E. Manuel was invaluable. Manuel's work focuses heavily on Newton's philosophical motives for developing a scientific method in the first place. He has discussed Newton in terms of historical and philosophical context. Newton's theories revolutionized theological thought by intending to reveal the mysteries of faith rather than obscure them. He very much believed in a God who initiated a divine plan to be followed by human beings. The methods he proposed for understanding the divine plan involve a synthesis of faith and reason. Frank E. Manuel's book clearly states Newton's philosophy of balance and provided an indispensable basis for the subject of this thesis.

John Locke: Prophet of Common Sense is a straight forward biographical work. Jeffreys puts Locke into social, poliitcal, and philosophical historical context. There is a twenty-year age difference between Newton and Locke. Jeffrey's book illustrates how the secular climate changed in this relatively short period of time and how the work Newton

had applied to theology was successfully applied to secular life by Locke. This book is particularly helpful in delineating Locke's philosophy on education and children.

Pestalozzi and Herbart and Education are biographical works with an emphasis on philosophy, innovation and applications of each man in education. Both Heafford in Pestalozzi and Dunkel in Herbart have done a good job of tracing the origins of their subject's thought. Consequently, both books provide clear, concise sources for sifting out the consistent threads that were beginning to weave through the scientific method which is the basis for the conceptual approach in teaching.

The books discussed above helped to clearly identify the philsophical assumptions upon which the conceptual approach is based: (1) Human beings are an integral part of nature and are therefore subject to the laws of nature. (2) The human personality is developed through sensory experience processed through a double faceted mind. (3) Human progress is a worldly possibility not controlled by unalterable forces outside of self. (4) Knowledge obtained through reason is the key to understanding and therefore controlling nature and self. (5) Mankind is capable of attaining ultimate good through individuals. Ultimate good will be reflected in a utopian society free from external controls. (6) Mass education is a vehicle for social reform with a moral obligation in the secular realm. (7) Reason is the true reflection of mind which provides the model for cognitive process in education. (8) Knowledge is utilitarian and applicable at both the concrete and abstract levels.

Focusing on these assumptions, a number of other scholarly works provided valuable information about the evolving use of the conceptual

approach in education. For example, Dorothy Roger's Oswego: Fountainhead of Teacher Education is a comprehensive work on the development of teacher training institutions initiated by Dr. E. A. Sheldon. The book contains extensive biographical material on Dr. Sheldon and a detailed analysis of the methods he employed. Dr. Sheldon had his roots in Pestalozzian thought as practiced in Europe a generation after Pestalozzi's original work. Changes had taken place and Sheldon initiated other changes of his own. The widespread influence of the Oswego movement throughout the United States in the late 19th and early 20th Centuries lends credence to the theory that contemporary methods of teaching for concepts can be traced directly back to Newton and the Enlightenment.

Frank P. Grave's Great Educators of Three Centuries was useful as a concise but thorough overview of educational thought from Locke to the present. What Brinton and Collingwood had done with philosophers Graves has done with educators.

The preceding historical works formed the basis for discussing the conceptual approach on the philosophical level. In contrast, Piaget, Lawson, and Ornstein provided the nucleus for the discussion of the conceptual approach on a practical level. Each of these works deals with the human learning process in terms of physical and nervous brain structures. Piaget's conclusions are drawn primarily from external observation. Lawson talks in terms of laboratory experiments, including surgery on the human brain and nervous system. Ornstein has edited a volume which discussed the human learning process from both psychological and physiological frames of reference. Each author seems to conclude that learning is a bimodal operation which involves a synthesis

of fact and speculation. This is the operation that is necessarily stimulated when using the conceptual approach in teaching. What Newton concluded intuitively, modern scientists have concluded empirically.

This thesis is an attempt to trace the origins of teaching for concepts in a way that preserves the essence of a collective thought. Divergent emphases and interpretations in individual schools of philosophy and education are also examined. The purpose of the study is to demonstrate the validity of seeking balance in instructional method. Chapter II discusses the historical development of the conceptual approach and Chapter III examines the contemporary rationale for the conceptual approach. A case study illustrating the use of balance in instruction and describing the curriculum used is provided in Chapter IV.

CHAPTER II

HISTORICAL DEVELOPMENT OF THE CONCEPTUAL APPROACH

Sir Isaac Newton (1642-1727), a prime mover in the period known as the Enlightenment, deserves credit for chrystalizing the process educators currently label the conceptual approach. Analyzing Newton's philosophy and methodology provides a sterling example of the evolution of this strategy. His thought is a synthesis of western intellectual history from the Renaissance to the end of the Reformation giving rise to the intellectual revolution known as the Enlightenment.

In the early 1500's the intellectual climate in northern Europe was such that two men, Copernicus and Erasmus, working in different geographical areas and from divergent poles of the intellectual spectrum, science and theology, came to the same conclusion, i.e., the earth is not the center of the universe. God's universal plan was of a different nature than had been previously believed. Copernicus (1473-1543) is important in that he initiated the theory of a heliocentric universe which inspired men to wonder about the earth's relationship to this newly hypothesized center. Pondering this question led men like Leonardo da Vinci to conclude from research in the field of hydraulics and hydrostatics that

> "every weight tends to fall toward the center by the shortest way...he perceived that the power which holds the moon in the vicinity of the earth and causes the satellites of Jupiter to circulate around that planet in essentially the same as the force which enables the earth to draw bodies to its surface.[1]

Galileo expanded on this discovery when he learned that the distance covered in a fall increases as the square of time involved. Gravity and levity became relative rather than absolute terms. Kepler provided another link in the puzzle when he refined the Copernican theory by proving that planets move in elliptical rather than circular movement. Here then was the raw material for hypotheses which required only a quantum mathematics, calculus, to be proven and stated as law. If there was a law that governed the motion of the earth, it followed that there must be other observable laws that could apply to all other physical phenomena within the human experience. Since time immemorial, men had been speculating about God's universal plan in creation at a philosophical level. Their belief was based on faith, and there was never any attempt to verify empirically that which was felt intuitively to be truth.

In the theological realm the Renaissance produced humanists such as Erasmus whose philosophies helped to form the basis for the Reformation and the questioning of the established church as being equated with the authority of God.

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[1]Burns, Edward McNall, Western Civilization, Their History and Their Culture, W.W. Norton and Co., Inc., 5th ed., 1958, page 391

> Erasmus believed that all misery and injustice would eventually disappear if only the pure sunlight of reason could be allowed to penetrate the noisome cavern of ignorance, superstition and hate. With nothing of the fanatic about him, he stood for liberality of mind, for reasonableness and conciliation rather than for fierce intolerance of evil. He shrank from violence and passion of war, whether between systems, classes or nations. Much of his teaching and writing was dedicated to the cause of religious reform. The ceremonial, dogmatic, and superstitious extravagances in the 16th Century Catholic life repelled him. But it was alien to his temper to lead any crusade against them. He argued against ecclesiastical Christianity and argued for a return to the simple teachings of Jesus.[2]

Between Copernicus and Erasmus the world was provided with a new rationale and the beginnings of a strategy for sharing the secrets of a previously mystifying universe. Sir Francis Bacon and Descartes were interesting examples of the thinking predominant in the transition between the first sowing of the scientific seed and the fully blossomed concept found in Sir Isaac Newton. Bacon could accept the scientific idea of universal patterns and the theological idea of virture in simplicity, but he was willing to apply these principles only to temporal matters. He could not yet bring himself to question the real authority of the church as the ultimate source of information about God's creation. Because he accepted universal patterns, he promoted the inductive method as essential for understanding the physical world.

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[2]Ibid., p. 403

> Philosophers should turn to the direct observation of nature, to the accumulation of facts about things and the discovery of the laws that govern them. (But he did not believe that empirical observation could be of any use in determining the truth of celestial matters.) For the voyage to the realm of celestial truth we must quit the smaller vessel of human reason and put ourselves on board the ship of the church, which alone possesses the divine needle for justly shaping the course...The more absurd and incredible any divine mystery is, the greater honor we do God in believing it."[3]

Reasoning was a purely worldly method.

While Bacon provided the impetus for the inductive method, Descartes advocated the deductive method, which essentially picks up where the inductive leaves off. Descartes forsook all form of authority. Primary observation and mathematical instruments were seen as the sole means of obtaining truth. One must begin with simple, self-evident truths, reasoning from these to particular conclusions.

> ' I think, therefore I am.' From this he maintained that it is possible to deduce a sound body of universal knowledge, to prove, for example, that God exists, that man is a thinking animal and that mind is distinct from matter.[4]

The dicotomy between mind as abstract and matter as concrete is what separates man from animals. Reason, that is mind, is a divine gift, given to man by God at birth. Innate ideas, the ability to analyze, speculate, and draw conclusions from original input are something outside of the sensory experience. Without the distinction of mind, all matter, including human physical systems, are one in nature.

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[3]Ibid., p. 411.

[4]Ibid., p. 519

Descartes saw the physical world in terms of motion and extension. God was a first cause, the original motivator. After the first push man makes his own waves, thus creating a mechanistic, cause and effect physical universe. Finally man is freed from a controlling God, and one's destiny is essentially in one's own hands: "...the whole idea of spiritual meaning in the universe was cast aside like a worn-out garment."[5] Bacon would not question authority while Descartes not only questioned but went to the extreme of refuting it all.

Isaac Newton, as much as any other man was both producer and product of the time and environment into which he was born. He found himself in an era that had been shaped by the thought of men such as those previously discussed. The Renaissance in northern Europe was concerned with practical aspects of human achievement and centered mostly around philosophy and literature which culminated in the Reformation. The Reformation in turn created an intellectual climate which required a renewed evaluation of both the knowledge explosion in science and the philosophical explosion in theology. The Reformation left the world with the following legacy: (1) a raft of diverse religious sects, none of which were strong enough to impose their will on the others, thus a de-facto religious toleration existed; (2) a boon to mass education in the various sects which set out to spread the word with evangelical zeal; (3) the addition of practical courses in church related schools to meet the needs of an expanded school population,

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[5]Ibid., p. 520.

some even opened their doors to the new science; and (4) a precedent for challenging the authority of the established church and placing new emphasis on the Bible and faith as the final source of religious truth. In short, the legacy was a full blown cultural conflict. Traditionally, divine revelation through faith had been the dominant cultural value. Suddenly, divine revelation through reason was also being accepted as a cultural value.

> While it is self-evident that Newton was born into a scientific world at a given stage in its development, it may sometimes be forgotten that he was also born into a European religious world which for more than half a century had been grappling with the problem of how to assimilate the growing body of scientific knowledge, and that in England at least, a fairly stable rhetoric governing the relationship between the new science and religion had been evolved. Newton could alter the rhetoric, amend it in fact, while adhering to it in principle, but he could never completely escape it.[6]

Rather than limiting himself to one school of thought or the other as his predecessors had, Newton chose reason as the key to all manner of divine revelation. Consequently, he attempted to apply reason equally to the celestial truth (God's word in scripture) and temporal truth (God's works in nature). Newton's upbringing and education had been nurtured in an atmosphere of strict Protestantism. He was a pillar of the Anglican establishment. His Anglican orthodoxy was never questioned, but there is indication from his own recently discovered religious essays that there were puritanical roots deeply embedded in his theological thought. To him the Bible was the

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[6]Manuel, Frank E., The Religion of Isaac Newton, Clarendon Press Oxford University Press, Ely House, London 1974, page 9.

literal and ultimate word of God, and yet he was a firm advocate of the scientific method. The Bible was the source for understanding the ultimate possibilities for man and consequently the goals to which individuals should aspire; nature was God's way of allowing man to understand the creation and the rules established by God for men to follow. In his studies of nature and the Bible, Newton used both the inductive and deductive methods. He reasoned full circle. He examined the whole and reduced it to its most simple parts and then reasoned from the most simple parts to draw conclusions about the relative position of the whole. In this way Newton made the intuitive leap between the cyclical revolution of the bodies of the universe and the cyclical pattern of development in human history.

> There were underlying operational designs in the world that could be defined as the history of the motions of the planets, which displayed a marvelous ordiliness, and the history of the revolutions of empires and churches which had similarly simple patterns-one so simple that it could be contained in two small books, Daniel and the Apocalypse, that were really repetitions of each other.[7]

> ...his great synthetic mind wove its multiple strands together to make a brilliant new tapestry. In methodology he integrated the empiricism of Bacon and the mathematics of the ancients; in physics he integrated Kepler's planetary motions with Galileo's terrestial ones. In both cases he added his own inimitable flourishes making his productions something wholly new.[8]

In short, Newton exercised both the cognitive and affective modes of his mind. He had employed the process necessary for conceptualizing.

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[7]Ibid., p. 78.

[8]Ibid., preface by Dobbs, p. XI.

He illustrated the essence of thinking creatively by using original data to draw new conclusions. Here then was a living model for future advocates of the conceptual approach to follow. Because he was a man of infinite patience in his study, devoted to detail, his written work provides an impeccable recipe for those interested in pursuing the scientific method. He did not take well to criticism of any kind and could be deeply offended by those who did not agree with or understand what he was talking about.

Not allowing his work to undergo the careful scrutiny of the scientific method he professed left much of Newton's thought unexplained to those who would follow his philosophical footsteps. Analysis of his writing on religion indicates that his concern for the development of empirical observation was to enhance man's understanding in the theological rather than the temporal realm. The scientific method was never intended as an end in itself, but rather as a means to an end larger than self and the secular world. In Newton's mind, God had provided human beings with physical senses so that they might perceive and be sensitive to the universal truths which were the basis for understanding all of creation of which man was an integral part. Ironically, the method he advocated for unlocking God's mysteries placed so much focus on the "real" or observable world, that it came to be applied more readily to secular rather than theological problems.

John Locke is an example of the kind of person who found Newton's work most applicable to everyday problems in society. His applications are best expressed in his political and educational theory.

Individuals are capable of critical and reflective thinking which results in the ability to make rational, beneficial choices regarding self and society. So might John Locke have said in conversation with a contemporary. And just as likely would have been a retort similar to this: Nonsense, man's nature and purpose in this life are obscured from common knowledge because divine law dictates it; ony God knows what is beneficial for man and society. Newton would agree in spirit at least with Locke's hypothetical statement. He would, however, also agree that only God knows what is beneficial for man and society, but he would not agree that this knowledge was necessarily obscured from common thought altogether. He believed that there were a chosen few, himself among them, who were given the gift and task of making God's laws and will known to the common man. Newton and Locke were the exception rather than the rule in their own time. We know Newton's rationale, which was based in religious philosophy, but Locke, while devout, was basically a more secualr mind. If asked to explain his views, Locke might have referred to the recent changes wrought in society by the period of exploration and discovery. Whole new vistas had been opened up to previously self-contained civilizations. Europeans were drinking such exotic things as tea and coffee and preserving foods with rare spices. Men were accumulating wealth in the form of rare metals. And with this accumulation of wealth, dynamic in nature, were there not the implications that there was a chance, no matter how remote, that the single individual through his own efforts might secure a reasonable piece of the material pie? Certainly

the rising merchant class was proof positive of this hope. Family wealth in the form of land was still the overriding means to status, but it was no longer the only means. If God had intended man to blunder blindly through this life in hope of some reward in heaven why had man been allowed to conquer the oceans to gain the where-with-all to control his own destiny in this life? The answer was, man had not been "allowed;" allowance implied the power to also "disallow." What man had been given in the beginning was Reason, with a capital R, to discover the secrets of the universe which were the keys to progress in this life. Further evidence of this vehicle for progress was the technology that man had created, through reason, to supply the demand for products in an ever increasing commercial economy. With the technology came a shift of labor from the land to cottage industries and factories. The old order was no longer viable. There was a need to reevaluate and reconcile the values of the old order and the new. This embryonic state of industrial capitalism created a conflict not only of religious values but also of secular values which needed to be adjusted, and it was left to men like Newton and Locke to articulate a thought which had been submerged in the society for a number of years before it would be brought into the light and into an atmosphere which would not categorically reject it.

Locke was a prime candidate for this job of articulation. He was scholarly, scientific, and philosophical, yet continually involved in political and practical affairs of his time. Of Puritan background,

he held a long association with Lord Shaftsbury, an ardent supporter of Protestant causes, who was in and out of favor with the government until his death in 1681. Locke's early political convictions were royalist, but these changed when he saw religious persecutions permitted through the Clarendon Code in 1666. His views favoring religious toleration were enhanced by seeing the practical effectiveness of such practices in Brandenburg, Germany where he had been sent on government business. In spite of living through periods of tremendous change and upheaval in English government, Locke managed to emerge relatively unscathed. Perhaps his good fortune was due to his general inclination not to seek personal aggrandizement and his ability to judge when not to be in the lime-light. Most of his works were not published until between 1690 and 1695. Delayed publication was a wise move. Many "radical" ideas written at an earlier time were no longer considered radical.

Inevitably in a philosophical discussion concerning the nature and purpose of man, someone will ask, " How do you explain all the evil in the world? " It is important to remember that Locke was a man of faith as well as reason and in this respect his thinking was truly a reconciliation of old and new values. Had Locke not been a man of faith, his views might have been too radical to be accepted by the bulk of people in the 18th or the 20th Century. A belief in God was a value cornerstone in the society. Locke did not reject that concept. Along with Newton, he simply accepted God in a new dimension; God was a first cause rather than just a first. As in pre-17th Century,

morality was still an essential ingredient in human nature. In fact it was still morality which was at the base of human progress, but the emphasis had shifted from the next world to this one. Morality had shifted from the passive to the active tense, which is one of the primary elements in the conceptual approach.

Being a man of science, Locke had long used the inductive method of problem solving. Experiment and observation were not new tools to him. He met Sir Isaac Newton in 1687, at which time Newton had developed his theories of gravity. Given his own background and Newton's discoveries the combination was probably enough for him to clarify his ideas of God in nature.

> Newton's life work, and especially his perfection of the calculus and his grand mathematical formulations of the relation of the planets and the laws of gravity seemed to contemporaries to explain all natural phenomena, or at least to show how all such phenomena, including the behavior of human beings could be explained.

Therefore, when asked how do you account for all the evil in the world, Locke could explain that evil exists because man has broken the laws of nature which are in fact the laws of God. Man is living in a state of disharmony because he has not developed his ability to reason which is the only means of understanding the secrets of the universe. Develop reason and man is capable of living in harmony with nature, thus creating the perfect society. Once we understand the nature in human affairs all we have to do is regulate our actions

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[9]Brinton, Crane, The Shaping of Modern Thought, Prentice Hall Inc., Englewood Cliffs, New Jersey 1963, page 109.

accordingly and there will be no more evil behavior. Reason is the vehicle by which one separates appearances from reality and reality is basically a set of perceived relationships.

How then, does one develop reason? Newton provided the clue. If nature is the embodiment of God, then one develops Reason by observing nature. The scientific, inductive method is the strategy for observation. Reduce all things to their simplest form. Strip them of all artificial, nonessential trappings. Human institutions must be made more simple. Government should bring order, but not suppress; religions should reflect a natural piety without "paganistic" ritual; education should develop reason to produce moral citizens. The underlying assumption is that institutions are extensions of the people who make them. People, before being corrupted were extensions of an orderly, law-abiding nature. People controlled the institutions rather than the institutions controlling the people. Here is the basic premise of the democratic society. And so, here are the seeds of the necessity of a conceptual approach for teaching in a democratic society. Further, in order for rational people to control institutions, all the people must be educated in the development of reason. The conceptual approach is therefore directed toward mass education.

In his specific proposals for education, Locke remained true to the model provided by nature. Education of the child should begin with an observation of the child to determine his individual needs. The child, like everything in nature, has specific stages of maturation which require special attention and technique. Once needs are determined,

the teacher must maintain a balance between freedom and authority. Attitudes must be developed through curiosity and satisfied as nearly as possible through first-hand experiences. Knowledge imparted should be usable but not necessarily confined to concrete application. Truth is a valuable end in itself and is of course applicable or utilitarian on abstract levels. The child's morality should be developed through self discipline and self denial. The inductive method is consistent with Locke's view that the new born child does not have anything registered in the mind until he begins to experience the outside world.

> ...simple ideas which result from sense perception are foundations of knowledge; no human being could live intelligently on the basis of them alone. These simple ideas must be integrated and fused into complex ideas. This is the function of reason and understanding, which has the power to combine, coordinate, and organize the impressions received from the senses and thus to build a usable body of general truth. Sensation and Reason are both indispensable, the one for furnishing the mind with the raw materials of knowledge and the other for working them into meaningful form.[10]

Since the child receives the beginning of simple sensory experience at birth, the parent as teacher emerges as one of the entities in the conceptual approach. This thought was most carefully nurtured by those who later refined Locke's ideas. Combined sensation and reason are the seeds of modern cognitive theories which will be discussed at a later point.

A common goal for mass education implies a common school for rich and poor alike. Locke was revolutionary in his suggestions that a

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[10]Burns, Edward McNall, Western Civilization, Their History and Their Culture, W.W. Norton and Co., Inc., 5th ed., 1958, page 523

gentleman's son should learn a trade, and that the laboring class should have working schools which would be paid for by the products of the children's labor. The suggestion for "gentle-sons" was not followed, but some schools for the poor had their foundations in Locke's idea. Lest we lose sight of how unorthodox these ideas must have seemed to many of the people of the day, the following quote written in 1723, (21 years after Locke's death) might serve to bring us back into perspective. "To make society happy it is necessary that great numbers should be wretched as well as poor."[11] The rationale behind this kind of thinking was that if men were not in dire need what could possibly motivate them to do an honest day's work. The uplifting of the poor, in the minds of many, was the sure road to the decline of civilization! Fortunately, there were philosophers like Voltaire and Rousseau to popularize the suggestions of Locke so that they did not fall altogether on a society of deaf ears.

Voltaire helped to popularize the ideas of Newton and Locke but it was Rousseau whose writing most influenced one of the educators, Johann Heinrich Pestalozzi, whose philosophies were to find their way and exert tremendous influence on educational theories in the United States. Rousseau's treatise on education, Emile (1762) contains threads of Locke's philosophy, but it is essentially a distortion of Locke's original thinking. For example, the book stresses the importance of family life, bodily exercise and first hand experiences as a source of knowledge.

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[11]Heilbroner, Robert L., The Worldly Philosophers, Time Incorporated, New York, 1961, page 31.

It also advocates the starting point of any pursuit of study as the child's need, desire, and readiness. Both Locke and Rousseau believed that the best teaching is done in a tutorial relationship. Beyond this, however, Locke and Rousseau part company. Self discipline and self denial were not elements that Rousseau practiced in his own life or advocated for others. His is not a distortion by manipulation, but rather a distortion through omission. Rousseau liked the idea of uncorrupted nature and from this concluded that children, peasants, and savages are the virginal reflections of such. For Rousseau, education meant leaving the child alone to his own devices until at least the age of twelve, which would allow for an uninhibited unfolding of the child's nature, which was innately good unless spoiled by society.

Johann Heinrich Pestalozzi read Emile and was taken with the idea of natural education. He agreed that children move through definite stages of development and that each stage called for a different approach to learning. He was also very much in favor of knowledge gleaned outside of the text book. While acknowledging the influence of Emile, he was discerning enough to spot many of its impracticalities. Pestalozzi would likely have gotten along famously with John Locke. The following is a summary of Locke's educational philosophy, but it could as easily have been written about Pestalozzi.

> Example and practice are better than precept. Children should not be wearied with lectures. Children are not capable of reasoning from remote principles. They cannot conceive the force of long deductions. The reasons that move them must be obvious and level to their thoughts, and such as may be felt and touched. They should as far as possible be taken into confidence and dealt with as one human being to another. Above all, there is need for honesty in the teacher. Children easily perceive when they are slighted or deceived.[12]

Pestalozzi was easily influenced by the philosophies of the Enlightenment in that he already had a well developed social conscience and a tremendous desire to serve man and society. His biographer commented that for Pestalozzi, "Education was not simply a matter of teaching children, but of improving society and enabling every individual to live a full and harmonious life."[13] From 1774 to 1778 he conducted the Neuhof (New Farm) experiment. He established a school for children of the poor. The curriculum was entirely practical: reading, writing, arithmetic, and religion, plus vocational jobs which helped support the children and keep things running as Locke had proposed. The boys were engaged in simple agricultual jobs and the girls had their counterpart in spinning, gardening, and cooking. Pestalozzi believed that it would be unfair to train children beyond their reasonable economic expectations. So the food was simple, as were all living conditions. His aim was to teach them to survive as well as possible in their own environment of poverty. Perhaps Pestalozzi was the first

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[12]Jeffreys, M.V.C., John Locke:Prophet of Common Sense, Methuen and Co., Ltd., 1967, page 61.

[13]Heafford, Michael, Pestalozzi: His Thought and Its Relevance Today, Methuen and Co., Ltd., 1967, pages 15-16.

educator to develop a truly relevant curriculum.

In 1779, the school was forced to close due to lack of funds, but the time spent was a success. The children had learned and grown healthy, proving to Pestalozzi that his methods did work and providing him with the beginnings of his educational thought. It would be twenty years before he would have another chance to test his theory in a practical way. Meanwhile he wrote about education and corresponded with foreign politicians, particularly in France, who were open to his ideas.

It is ironic that Pestalozzi, a truly gentle man who subordinated everything to establishing a relationship of love between himself and the children he taught, should find his opportunity to teach through the destruction of war. In 1799, the Swiss Confederation had been defeated by the French. The canton of Nidwald had resisted furiously. Most of the adult population had been killed, leaving a passel of orphans to be cared for. Pestalozzi was given a convent in Stans and asked to set up a school for the orphans. He had many obstacles to overcome, the primary one being that he was seen as an agent of the hated government. The other was that he had eighty totally undisciplined, underfed and ill-clothed children of all ages with whom to deal. In one year he had achieved reasonable success, but the convent was turned back to the government to be used as a hospital, and once again his school came to an end.

For a short time he taught in a boy's school, but his unorthodox approach to education soon caused him to be demoted to being a teacher in a girl's school. Then, in 1800, opportunity once again was tempered

by sadness. The death of a friend left a position open which would allow him to open a school of his own. It was in this period, with the help of able and dedicated assistants, that Pestalozzi's educational theories were fully developed and tested.

The school's curriculum was based on the principle that education must harmonize with nature, which meant starting with the simplest elements, learning them, preserving them, and building on them. Pestalozzi differed from Locke in that he saw heredity as one determining factor in a child's ability to learn. What Galileo did for physics, Pestalozzi did for education; ability and potential became relative terms. Not all were capable of learning the same amount at the same time, but the proper stimulation was essential to develop the full potential of the child's mind. The level of difficulty of material must correspond exactly to the child's developing capacity to understand. In these ideas Pestalozzi was foreshadowing theories later developed by Piaget.

The basic mental processes involved in education were language, number and form. Language was seen as the essence of mental consciousness; therefore, the child must study sounds, sentence structure and semantics. Numbers were the vehicles by which the child learned about quantity, positive and negative parts, and relationships between objects. Form was the basis for writing, geometry and drawing. All learning proceeded from observation which involved using all of the senses properly tuned.

In keeping with the idea that education was the means through which to reform society, moral education had a prominent position in

the curriculum. Pestalozzi was the gentlest of men and his children were taught moral precepts through example and a deliberate method of building trust and security between himself and the children with whom he worked. They were not taught about religion and virtue but were encouraged to lead a virtuous life, which for Pestalozzi meant doing good for one's fellow man. Moral education began at home, and the school should be an extension of the warmth and security initiated in the home, particularly by the mother. "The institutes at Burgdorf and Yverdon too, Pestalozzi conceived as large families in which the teachers took over the role of the parents in encouraging family virtues."[14] Apparently Pestalozzi was particularly successful in this regard judging from a statement written by a government official who had come to evaluate the school: "Heart and reason work together and what these undertake in harmony is the most likely to succeed."[15]

Not to be neglected any more than intellectual or spiritual aspects of the child, physical development was carefully nurtured. Considering that physical activity for poor children was seen as wasteful and frivolous, Pestalozz's theory that the child's natural urge to move was the means of determining relationships to the outside world was truly radical. These were fortunate children to be given to a man who saw cleanliness, regular hours and meals, plenty of opportunity for exercise such as walking, skating, sledding, fencing, and dancing as

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[14]Ibid., p. 63.

[15]Ibid., p. 64.

efficient and effective tools of education. The physical education program centered on the basic method of moving from simple to complex. A further bonus in physical education was that it was seen as improving the desirable character traits of perseverance and courage.

Down through the ages educators have had to deal with the question of discipline. Pestalozzi was no exception. His philosophy as well as method, was practical and sane. Generally, order was kept, and he did require order and silence when the teacher was speaking. He also kept the lessons interesting enough to hold the child's attention. In one of his writings on education he talks about the idea of corporal punishment, which he allowed only if the child had a clear idea of what was right or wrong and if the relationship between the teacher and the student was like that of child and parent.

> The fear that one may thereby lose the trust of the children is quite unjustified. It is not the single, rare action which determines the feelings and attitudes of the children, it is the true nature of your disposition towards them as revealed daily and hourly to them, and the degree to which you like or dislike them which fix once and for all their feelings toward you.[16]

It is interesting to note the parallels between Pestalozzi's ideas of the child's true education beginning at home, the mother's obligation to the child to teach in such a way as to help him understand language and the world around him through talking and play, and modern works on parenting. Also, Pestalozzi's concern for the human being in the new industrial technology could have been taken from a

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[16]Ibid., p. 71.

current journal on psychology of education. "The new worker finds himself going through the same motions time and time again, day after day, the monotony and narrowness of his work is transferred to his whole existence." [17] Pestalozzi was one of the first in a long line of dedicated educators to take on the task of keeping the individual human in the face of mass education in a technological society.

Pestalozzi's method found its way to the United States via Dr. E.A. Sheldon, who was the founder of the normal school at Oswego, New York. Sheldon was born in Massachusetts in 1823, three years before the death of Pestalozzi in Switzerland. Both men were of humble background and charitable spirit and had a deep and abiding love for children. Each began his career by starting a school for children of the poor. Each was forced to give up when he could not get enough public support for his venture. Unlike Pestalozzi though, Sheldon did not have to wait long for another opportunity. He was made Superintendent of the public schools in Syracuse and then in Oswego where he set up a system of graded free schools. While spending time in Toronto, Canada, Sheldon became familiar with Pestalozzi's work through publications of the Home and Colonial Society. He returned to New York determined to teach the system to his teachers. He was wise enough to know that he did not possess the skills himself, so he gathered the best qualified faculty he could in the persons of Miss M.E.M. Jones and Herman Kruse. Both had successfully applied the method in England.

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[17] Ibid., p. 80.

Kruse was the son of the man who had been Pestalozzi's first assistant at Yverdon. Kruse and Jones not only taught the students but also trained old and new faculty members in the Pestalozzian principles. In 1865, the Oswego Normal School was made a state institution.

During the first four years that Sheldon's training school existed the course work could be completed in one year. The students were educated in how to develop mental faculties through lessons on objects such as plants and animals. In addition, they studied form, number, coloring, drawing, and physical activities which would entice children and develop taste and ingenuity.

The year Oswego became a state institution Sheldon decided that too many people were coming to the program lacking in elementary skills themselves. As a result, the program was expanded to include a preliminary year in arithemetic, algebra, grammar, composition, history, government, biology, botony, physics, vocal music, etc. In effect this was an attempt to make up for eight to twelve years of inadequate education. The second year contained the original curriculum plus advanced courses in subject areas, plus practice teaching.

The doctrine Sheldon imparted to teacher trainees was Pestalozzian in spirit but bore the mark of Sheldon's own interpretation:

1) Begin with the senses.
2) Never tell a child what he can discover for himself.
3) Activity is the law of childhood.
4) Train the child not merely to listen, provide variety for all the senses.

5) Reduce everything to its simplest form.

6) Move in sequence.

7) Make sure each lesson has a purpose or point.

8) Ideas before labels

9) Simple to complex

10) Concrete to abstract [18]

Basically what materialized out of this structure was that some people came to view the object as an end in itself and therefore practiced object teaching, while others practiced objective teaching which was aimed more at understanding larger concepts. For example, Miss Jones practiced object teaching through which she "intended to develop the pupil's accuracy of perception and growth in reasoning power. Lessons were to be arranged according to stages in children's mental growth and designed to promote skills in written and spoken language."[19] In contrast Krusi practiced objective teaching and condemned object teaching for stilted procedures. Krusi was most concerned with the lack of relationships in object teaching. Isolated facts did not allow enough opportunity for children to draw their own conclusions or formulate their own illustrations or experiments. In the judgment of the writer of this thesis, Krusi's thinking was more in line with what Pestalozzi originally had in mind. In spite of certain variations, the scientific

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[18] Rogers, Dorothy, Oswego: Fountainhead of Teacher Education, A Century In the Sheldon Tradition, Appleton-Century-Crofts, Inc., New York, 1961, page 19.

[19] Ibid., p. 20

method, physical education, and concern for the child's individual needs all took great strides in the Oswego movement.

Sheldon was not the first to attempt an application of Pestalozzi's methods, but he was probably the most influential since he was training teachers who spread the philosophy throughout the United States. The normal schools, numbering 356 by 1895, to one degree or another taught and promoted Pestalozzian principles.

> The steady stream of migration of Oswego graduates into the states, especially the Western States continued unabated for a series of years and constitutes the most important means by which Oswego ideas spread throughout the country in what seems an incredibly short space of time.[20]

Eventually institutions other than the normal schools began to employ the methods of the Oswego movement. Schools on the west coast using the method were Stanford, in Palo Alto, California, San Jose State, in San Jose, California, and Oregon College of Education in Monmouth, Oregon.

Out of the Oswego training school came such ideas as individualized curriculum, readiness, core curriculum, vocational education and education for citizenship. Each of these concepts have undergone various surges of popularity and unpopularity, but they still exist in one form or another today.

Another European educator of particular significance to the American schools and the development of a conceptual approach to teaching was Johann Friedrick Herbart. Herbart was a student in German universities at about the time Pestalozzi had reached the zenith of his career

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[20]Kliebard, Herbert M., American Education, Foundations and Superstructure, International Textbook Co., Scranton, Pennsylvania, 1970, page 31.

in Switzerland. Just prior to the end of Pestalozzi's career Herbart visited with the then famous and innovative educator and was greatly impres-impressed by what he saw. It is fair to say that what became the Herbartian school of educational thought might have developed quite differently had Herbart not met Pestalozzi.

Herbart's theoretical training was deeply imbedded in variations of Kantian philosophy as taught to him by Fichte, his principle teacher at the university level. Herbart's philosophical idea of morality in society, which was his primary focus in education, came from Fichte. But the method of developing the moral will of the child was more in keeping with Pestalozzian thought. For example, Fichte stressed that the aim of history, the development of mankind, was rational freedom. For Fichte there were three stages in this development: (1) absolute natural freedom, which (2) generated a feeling of need in self for control (government is the natural outgrowth of this need), and (3) a stage where the self no longer needs external control therefore overthrows authority and the self becomes the governor and the governed. The underlying principle here then is the prominent philosophy of the Enlightenment that society is reformed by reforming the individual. Further, this Utopian state is achievable because Nature, the embodiment of laws which cannot be broken with adverse effect to the human mind, is understood as the counterpart of mind. Mind and nature work cooperatively because man realized that they are two sides of the same coin and to do otherwise is to cut off one's nose to spite one's face. This process is in line with the Kantian idea of thesis, antithesis, and synthesis.

The process stated is a system of logic and comes out of Fichte's belief that "the fundamental ideas or concepts of various successive ages form a sequence, which because it is a sequence of concepts, is a logical sequence, one concept leading necessarily to the next."[21]

In terms of morality, Herbart agreed that the ultimate end was rational freedom which had internal motivation rather than external motivation through the forces of government. In many ways Herbart saw the development of the individual child as parallel to the development of mankind in society. Government, equated with punishment, not necessarily corporal, was necessary to curb the child's "wild impetuosity." The child must learn to sit still if he is to learn from the teacher. Discipline is used to show a child how a "moral will should judge a given action." Once this lesson is learned, the child will govern himself and there will be no further need for external control. Herbart's idea about discipline in education was based upon his belief that what is good for the individual is good for the society.

Since the revelation of nature was the road to perfection in human behavior, it follows that there must be some concept of the method for discovering this nature. Fichte taught Herbart that

> In every field of knowledge there are certain fundamental concepts or categories, and corresponding to them certain fundamental principles or axioms, which belong to the form or structure of that type of knowledge...so far, so good, but with the next statement, Fichte and Herbart part pedagogical company,...and are derived (according to the Kantian philosophy) not from the empirical subject matter but from the point of the knower."[22]

[21]Collingwood, R.G., The Idea of History, Ginn and Company, Boston, 1962, page 106.

[22]Ibid., p. 106

Fichte in effect was saying what Descartes had said earlier, that the only reality is in the mind of the beholder. If this is true, then there is no common body or concept of truth for mankind, only for individuals. Knowledge is essentially internal, rather than external. Herbart, as illustrated by his method, believed that the fundamental concepts did exist. He believed they were knowlable through observation and comparison rather than through the relationship of the individual to the thing or object. This method was more in keeping with Pestalozzi's method for learning by observing and manipulating objects, although Herbart was not so concerned with sensory experience as he was with the development of logical systems for determining relationships between concepts. The idea of breaking elements down to their simplest or most basic parts, as seen in Pestalozzi, was also consistent with Herbart's idea that knowledge is built upon logical structures proceeding from simple to complex.

Herbart's variation on this theme applied by Pestalozzi is that he saw learning taking place when materials were presented in relation to one another, rather than as isolated bits of information. Mind was built not by sensory experience alone but with the presentations of two absolute reals, both of which fought to remain at the conscious level of thinking. This theory is strikingly parallel to the thinking of some modern -day psychiatrists Herbart contended that two concepts could not exist in a contradictory relationship to one another. What would happen is that two reals would be presented. Since all things are part of a universal whole or body of laws, there are commonalities

which will allow them to exist simultaneously. However, if two concepts are contradictory, one attempts to cancel the other out, a process that is necessary for any new relationship to be discovered. In the attempt to negate one another, new dimensions are added, which is an extension of the thesis, anti-thesis, synthesis idea. "The ideas or presentations in mind were the by-products of those acts of self preservation performed by the soul when perturbed by the presence of another real."[23]

> This view that mind was built up out of presentations arising in it, with the existing structure continually altered by new presentations and with the new elements also modified by the existing structures they encountered was Herbart's theory of apperception.[24]

If a presentation was not given in relation to some other knowledge,then it would not be sufficiently strong to remain at the conscious level and would not be brought to the surface again until the mind was presented with material which was relevant to the submerged concept. One way to bring forgotten concepts to the fore was repetition of detail. Some indicate that this has been the rationale behind programmed learning. But it is also arguable that this was a distortion of Herbart's aim, since the repetition of information was part of a total system rather than an end itself. The process of association was to make clear a total picture of the nature of concepts so that the human mind reflecting that picture would achieve inner freedom.

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[23]Dunkel, Harold B., Herbart and Education, Random House, New York, 1969, page 47.

[24]Ibid., p. 54.

Because there was too much knowledge and the child's interests were "many sided", it was necessary to bring order out of chaos by classifying things according to similar attributes.

Herbart's curriculum was organized around the traditional subjects, but these were studied with the specific purpose of developing the empirical speculative and aesthetic skills of the child. The program was classified as either mathematical or historical or a combination. Under mathematics the child studied numbers and the natural sciences, since these were basically empirical. Under history, came also foreign languages and geography. These were considered speculative and aesthetic. Composition covered all bases. The idea was to study one thing to the exclusion of all others until all the parts were clear to form a whole. Then, related concepts were associated and built into a system according to relatedness. The system was most effective with and intended to be used with small groups of five to six students. Teachers used what they liked of Herbart and disgarded what they did not like. But basically, the Herbartian method in the United States centered around five steps: preparation, presentation, association, generalization, and application. This is a lesson plan format not unfamiliar to teachers today.

Herbartianism found its way to this country in the 1880's via students who had studied under Herbartian professors of pedagogy in Jena and Leipzig. By the time these third generation Herbartians were studying under Stoy and Rein at Jena and Ziller at Leipzig much of the philosophy regarding morality had been superceded by concentration on

the systematic five step approach in learning.

A tremendous amount of literature regarding the Herbartian method was produced in this country between the years 1889 and 1905. The National Herbart Society was organized in 1895 and became the forum for many famous educators of the day, many of whom were not necessarily avid Herbartians. It is easy to understand how Herbart's practical application of Pestalozzi's methods became popular, since they offered a great deal of direction for the teacher who was attempting to learn how to teach as well as how children learn. Unfortunately much of the theory behind the method was lost on teachers who could not think creatively enough to move beyond the rigidity of the five steps, and it is likely that this played a large part in the sudden demise of the Herbartian approach around 1905. Other reasons given were competition of ideas coming from the school of experimental psychology advocated by Wundt, Fechner, and Thorndike, and competition from educators like John Dewey.

There are those who believe John Dewey was anti-Herbartian, but it is equally arguable that he was anti-pseudo-Herbartian. Dewey was subject to third generation applications of Herbart's methods. Through the years,the method had come to be a kind of object teaching that had been criticized by Herman Krusi in the Oswego Movement. John Dewey approved of training the child to see relationships. He was, however, concerned that the child not be nailed to concrete objects, since he believed that democracy required continual readjustment to changing conditions in the society. Object learning was seen as inefficient

in that objects were an external stimulus rather than an internal stimulus. For Dewey, learning took place when the child was made to form habits or disciplines that could be called upon when needed for problem solving. His strategy for training the child was developed in the project or problem method for teaching. The steps are similar to Herbart's except that Dewey employed deductive rather than inductive reasoning to solve problems. His classic illustration of the fork in the road can be summarized as follows: (1) The child is given a problem, and initially experiences confusion and perplexity. (2) The child attempts to find a solution by calling on existing knowledge. (3) The child uses trial and error to find out what does or does not work. (4) The child tests his hypotheses further and in the process gains new experiences and information. This kind of procedure requires the school to provide human resources to initiate problems and material resources from which solutions can be derived. The curriculum is arranged in the following way:

> Subordinate each topic into studies; each study into lessons; each lesson into specific facts and formulae. Let the child proceed step by step to master each one of these separate parts, and at last he will have covered the entire ground.[25]

Dewey provided the basic model for the inquiry method, which is one of the more prominent strategies used today by those who prefer the conceptual approach to teaching.

Pestalozzi and Herbart had banked on the principle of rational individuals producing rational masses. John Dewey, too, counted on

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[25]Thayer, V.T., Formative Ideas In American Education, Dodd, Mead, and Co., Inc., New York, 1965, page 252.

the rational individual to produce a rational society; however he differed from them in that he did not find any absolutes in the nature of human behavior. Men were neither innately good nor innately bad. He emphasized the idea that men were initiators of institutions which were reflections of their individual nature in a given time and place. An institution, such as democracy, was an ideal initiated by the founding fathers which needed to be perpetuated in the children through education.

In spite of the grave social ills that rose out of industrialization, late 19th Century and early 20th Century America was optimistic, with a strong belief in the progress of nature. Philosophers had moved beyond Newton's cyclical interpretation of history. High tariffs left over from the Civil War, abuses by big business and corruption in government provided ample reasons to initiate reform. Cheap pamphlets, circulating libraries, and daily newspapers were all major sources for appealing to a strong literate middle class. The more literate a populace becomes, the more demanding it becomes with regard to the education of its children. No one believes more than a literate man that stagnation in education means not just standing still, but rather a giant step backward. If individuals in the society must be educated to make wise decisions for whole groups of citizens as well as for themselves, there must be a specific educational design for democracy. Teaching for concepts gradually became the essence of that educational design.

A nation born out of the Enlightenment was inherently compatible

with the precepts of a conceptual approach in education. American values were founded upon faith in the innate potential for progress in man, reform of society through reforming individuals, mass education for a large middle class steeped in the work ethic, separation of church and state, representative government, and a population with direct ties to Europe and respect and understanding for her educational systems. The first years of the new nation were too turbulent to allow much time for a systematic development of a philosophy of education, but that did not make educators any less ready to adopt philosophies articulated by men such as Pestalozzi and Herbart. By the 1880's and 1890's, when their ideas really took root, the nations was what she had always been, a land of contrasts and diversity, but exaggerated as never before. America was the last frontier, the land of opportunity. Her people were radical and conservative, tolerant and bigoted, agricultural and industrial, individual and collective but with a common cultural value upon which the nation was founded. They might disagree with one another, but they would never relinquish the right of the individual for self expression.

In spite of some radical departures from the original philosophies such as object teaching rather than objective teaching, deductive rather than inductive reasoning, and emphasis on the mass rather than the individual, the essence of the conceptual method has held fast since the beginning of the 20th Century. Human beings have a right to self determination. Morality, progress and self knowledge are viable goals through education. Appropriately, theories and analysis

of this approach are still in the forefront of educational thought.

Historical perspective teaches that learning takes place when there is a balance between analysis and intuition. Neither factor can stand alone to produce rational thought. Rational thought implies progress in human history. Progress can be defined as behaving positively to adjust to a constantly changing environment, but progress is hindered when there is a distorted emphasis on either analysis or intuition. Therefore, persons striving to develop the finest qualities in human nature have consciously sought equal stimulation of analytical and intuitive processes for learning.

Historically the essence of teaching for concepts is based on the scientific method articulated by Isaac Newton. Traditionally, individuals who have promoted the scientific method have looked to nonhuman nature to provide a model for univeral law governing human nature. Philosophers have justified such a method on the basis that all living things are part of a universal whole which can be perceived and observed through the senses. It has been assumed by most of those who have taken up the scientific method that man has been limited in his perceptions by sight, sound, smell, taste and touch. But, the search for an external model in nature has produced a technology that has expanded the physical senses, thus expanding the physical environment. Consequently, contemporary thinking has shifted from emphasis on a nonhuman model in nature, such as Newton's law of gravity to human models.

Telephones, televisions, and super-sonic transport are examples

of sensory and environmental expansion. Due to modern technology, time is recognized as a fourth dimension. Time is a physical reality just as space, height, and depth are physical realities. If physical phenomena can be created out of natural elements which were not previously perceived as physical, then it follows that there is a possibility for manifesting other realities out of that which is not readily perceivable. One cannot see magnetism, and yet it is a natural phenomena. It is experienced; therefore, it is real. If there are such examples in nonhuman nature, then perhaps their counterparts can be experienced in human nature. Contemporary research on the nature of the learning process is now focusing directly upon observation of human physical and psychological behavior. Studies indicate that what was previously unknowable on an empirical level about the human psyche is based in physical structures found in the human nervous system and brain. The implication of such theories is that intuition as well as analysis is a provable entity which can be observed, identified, and developed. Perhaps Newton was aware of the extrasensory potential within himself and others. If this was true, then the scientific method had much greater ramifications for Newton than for his contemporaries. Only now are scientists beginning to understand the scientific method as Newton intended it.

CHAPTER III

CONTEMPORARY RATIONALE FOR THE CONCEPTUAL APPROACH

Jean Piaget is one of the modern educators who has used direct observation of children in an effort to understand how human beings learn. Interestingly enough, Piaget uses the inductive method, as it might have been practiced by Newton for himself but presents a situation which requires a deductive approach to study the natural learning process in his subjects. Piaget began his studies by observing and working with his own children in infancy. He patiently and laboriously recorded each step of the learning process as he perceived it. Basically, the child was provided with an external stimulus which would cause him to react. For example, Piaget gave his young son a toy; shortly, he put the toy outside of the child's reach but still within view. At first the child would simply cry, but after repeated experience with the same stimulus, the child learned that by moving himself toward the object he could achieve his goal. As each step is accomplished a new situation is set up. Each time the child is allowed to struggle until he conquers the problem. Piaget altered the situation being observed only in order to record the reaction to the change in environment and to determine how long it would be before the individual internalized the change and adapted behavior to specifically meet the unique situation. Piaget accepted the idea of an

automated internal process which allows human beings to solve problems. Therefore, he began his work by trying to determine the exact nature of that process.

After many years of studying and observing the learning process in his own and other school children, Piaget believed that there was a definite and absolute correlation between the individual's physical neurological development ond one's psychological ability to learn at any given time. Under ideal conditions an individual moves from the egocentric concrete world progressively to the adult universal abstracted world. The growth process involves both a neurological structure and a psychological structure, the combination of which accounts for a person's perception of his world at any one time. According to Piaget each period of development constitutes one structure which is the basis for the development of the new structure. Old and new abilities and potentials are combined and recombined in a spiraling effect until the individual has achieved his full capacity to learn. Through a continual, internal process of resolving the conflict between expectation and outcome, the trial and error method, learning takes place. This is not a new idea, but Piaget gives it new dimension in that he believed that the environment must provide the proper stimulus or the spiraling effect of the structure method is broken and one's ability to learn beyond a given structure is stopped, either temporarily or permanently.

Rousseau had observed the inborn desire to learn in children. Because a child's curiosity is natural, Rousseau assumed that a child

left alone in nature would develop to its fullest potential. Piaget also observed the natural urge in children to learn but came to understand that even internal structure required stimulation from the external environment to be operational. Rousseau failed to acknowledge the qualified differences among plant, animal, and human life. Pastoral nature is governed by absolutes, such as light and dark,heat and cold, dry and wet. Plants are limited in the ability to adapt beyond these absolutes. Animals, because they are mobile, have more license to change with the environment. Man has the ability not only to change with the environment, but to change the environment to meet his needs. The adaptive nature in man is lodged in the ability to anticipate an outcome, given certain known variables. But the ability to adapt is a learned concept. Human infants are unable to manipulate the environment on their own. At the earliest stages, left totally alone, they are no more mobile than a plant with regard to the environment. They are even more helpless than plant life in that they are not nurtured directly by the atmosphere. Mature human beings must be available to stimulate and manipulate the environment for them. Even when given physical sustenance of food and water, studies have shown that human infants may suffer mental retardation and even death for lack of psychological sustenance.

The teacher is a vital source of psychological sustenance. A child's first teacher is the parent. The second may be siblings or other immediate family members. Peers and nonrelated adults also function as teachers until the child reaches the age of meeting the

teacher in the classroom. How his life-experience teachers have prepared him will often determine his ability to adapt to institutionalized instruction. Assuming that the child reaches school age with his learning structures intact, the classroom teacher has a duty to continue a natural and purposeful stimulation of the learning structures begun in the pre-school years. The classroom teacher is just as capable of retarding or stimulating the spiraling effect of the learning structure as any other teacher the child may encounter. Piaget indicated that three variables influence the development of a child's ability to learn: (1) Maturation of the nervous system, which is not always commensurate with chronological age. (2) Experiences in interaction with physical reality. (3) Influence of the social environment.

Given a brain and nervous system capable of processing external stimulus, human beings are constantly in search of what Piaget calls "equilibrium." Equilibrium is harmony between sensory information and accumulated knowledge. Given certain known information, learned through experience, the child will anticipate a specific outcome. For example, assume the only red food a child has eaten is a ripe strawberry. From past experience the child would believe that red food is soft and sweet. Given a radish to eat, the child will experience a hard and bitter red food. There is a conflict between expectation and outcome. Piaget believes that the conflict must be internalized and resolved by being catalogued in an existing learning structure. This constitutes accumulated knowledge. The existing

structure takes the new information and uses it to create a new structure which supercedes the old. Such a process provides for a continuity of development. It is necessary to know at the literal level that red food can be both soft and sweet and hard and bitter before a child can grasp the general concept that color does not dictate the taste of food.

The search for equilibrium is an infinite process. Piaget recognized that the quest for harmony between the factual and the speculative takes a person through very definite stages of development. In infancy the child depends overwhelmingly on his senses. The environment is experienced through sight, sound, smell, taste, and touch. Next is a sensori-motor stage during which the child experiences his own body in relation to other mass in the environment. A third stage is preoperational, which Piaget refers to as a period of "concreteness." The child can understand numbers and letters in terms of objects that can be touched and manipulated. At the end of the concrete stage, the child enters a transition period from the concrete to the formal or operational levels of thought. This is the period of adolescence, which Piaget places within the range of about 11 to 20 years of age. It is at this point that the child is able to understand at both the literal and conceptual levels. Here then is the contemporary rationale for devising curriculums, particularly beginning at the junior high school level, that stimulate conceptual thinking. In the process, it is very important to remember that factual or literal information must still be reinforced and introduced.

Old and new concrete material is the fuel for conceptualizing.

While Piaget provides an excellent guide for understanding the psychological influences in the development of the learning structures, another individual, Chester A. Lawson, has proposed a theory which may explain the physical phenomena involved in the structural development. In the book, Brain Mechanisms and Human Learning, Lawson refers to Piaget's theory on cognitive development to explain the biological basis of memory. His work attempts to illustrate the neurology of attention, consciousness, and thought. Piaget has explained that there is a synthesis of old and new experience to create new knowledge. Lawson indicates that the biological structure for this integration is found in the cortex area of the brain. In the brain, memory is the storing of past experience. Memory is the element in the human psyche which provides the predictive capability necessary for survival in a dynamic environment. Lawson accepts the theory of internal and external drives for acquiring new knowledge for adaptation and survival. There is a memory or storage unit for both internal and external stimulus. All of the individual's experience from conception to death is stored chemically in the human brain. At the time of conception the chemical, DNA, carries the information called heredity. DNA is an inborn stimulus. Without the chemical memory base for the orderly construction and development of cells which equal human life there would be not "mankind." The chemical, RNA, carries the memory of experience from the external environment. DNA explains the natural urge to learn in order to grow. RNA explains how the human brain collects what is external to innate

experience. RNA stores experience via language. Experience from the object world involves mass. But physical mass cannot be stored in the human brain. Therefore, language is the means by which mass is removed from the experience while maintaining the physical effect of the experience. For example, one does not have to touch fire more than once to predict that fire is hot and causes physical pain. Once the individual has experienced the sensory effect of the hot object, fire, and has connected it to the word, fire, he can predict the outcome of touching fire without experiencing it in the mass. He knows inuitively, rather than empirically, what the outcome will be.

If one is subject to a constant bombardment of stimulus from the environment, as all humans are, there must be an operational system which allows past experience to be sorted out and used selectively. Lawson indicates that Piaget's stages of human development explain the selection process. In the earliest years the child perceives the objective world and relates to it by appropriate motor action. Lawson says that a code is developed in the central nervous system which coordinates perception and behavior. He labels the code I^m. The child begins to learn to speak and a new code begins to develop in the central nervous system, code I^v. At this stage the child will give both motor and verbal responses to external stimulus. There is no clear-cut or conscious differentiation at this point. As the child matures, Code I^m and I^v coordinate to form yet another developmental stage. Language becomes more complex and sophisticated. The child can describe, converse, and use simple explanations for solving problems, but he is

not yet able to produce his own solutions to problems. A fourth developmental stage is entered when the child can classify and draw conclusions about relationships between given information. At each stage language stores the new information until the individual is capable of relating to the environment at increasingly predictive levels. The highest level of development involves the ability to speculate accurately about the outcomes with regard to unknown factors. This is the essence of problem solving which is reserved for logical thinking. If no new situations are encountered, there is no need to think beyond known experience. But the environment constantly offers new challenges. Reasonsing involves the "selection of a known system of ideas or a language system which serves as a hypothesis for organizing and explaining otherwise disconnected data."[26]

For a teacher at the junior high level, it is particularly important to stimulate the thought processes used at the fourth stage of development. Level four emphasizes differentiation in language, such as comparing, contrasting, and serial ordering. Literal skills are involved which are intended to direct the child's attention to the word elements in propositions and to the relations among them. Out of this process will come an awareness of contradictions between what one already knows and does not know. Once the child is made aware of contradictions which are specific parts, the curriculum must provide an opportunity to resolve those contradictions by stimulating perceptions

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[26]Lawson, Chester A., Brain Mechanisms and Human Learning, Houghton Mifflin Co., Boston, Massachusetts, 1967, p. 89.

of general patterns or wholes. Piaget has stressed that the contradictory element is essential to progress in learning because it is what perpetuates the drive for equilibrium between the internal and external environment.

Language is stored via RNA. Experience will remain at the subconscious level unless appropriately stimulated by sensory perception. Storing information at the subconscious level is nature's way of protecting the human nervous system from random bombardment threatened by a nonselective environment. Experiments in which the brain has been stimulated electronically, which causes persons to literally relive a seemingly insignificant event, support the idea that all experience is stored chemically in the nerve tissue of the human brain. Specific curriculums can and should be designed to select particular knowledge to build the higher-level thinking skills. Lawson stresses that

> The teaching of nonscientific language systems is in need of someone to identify the experiential basis of the systems to present these experiences to the students and to invent the concepts making up the system itself.[27]

Since the bulk of human experience is stored at the subconscious level, it is necessary to consider what influence the subconscious mind has on the learning process. Robert Ornstein, in a collection of dissertations from a symposium on the nature of consciousness, proposes that the influence is considerable. Once again, some of the laboratory experiments to which Ornstein refers seem to support Piaget's original

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[27]Ibid., p. 90.

observations about the learning process, particularly at the operational or logical, abstract level. Ornstein, along with Lawson and Piaget, concludes that the highest level of human thought involves problem solving. Like Piaget he sees a direct correlation between the biological structure and the psychological ability to learn. Whereas Lawson's experiments provide supporting evidence for the neurological base for learning, Ornstein proposes a theory which illustrates how both the biological and psychological bases operate.

From a biological frame of reference, he illustrates that the binary structure of the human brain provides man with two minds. He drew this conclusion by studying individuals who, because of a rare type of epilepsy, had had the connecting nerve tissue between the two sides of the brain severed. It was discovered that

> ...each hemisphere seems to have its own conscious sphere for sensation, perception, ideation and mental activities. The (severance) does not seem to alter the personality or change ordinary behavior...but, the right hemisphere cannot execute tasks ordinarily controlled by the left hemisphere and vice-versa.[28]

In the normal brain, the gap between the two minds is bridged via the connecting nervous system. Ornstein believes that the function of the two minds is to provide an optimum potential for problem solving. In a normal right-handed person, the left side of the brain deals with problems that require serialization, comparisons, and contrasting parts, while the right side of the brain perceives general patterns or wholes. The left side is controlled by language, the ideal tool for discrimination,

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[28]Ornstein, Robert Evans, Ed., The Nature of Human Consciousness: A Book of Readings, Viking Press, New York, 1974, page 41.

while the right side is controlled by nonverbal intuitive processes. Experiments were carried out on the epilepsy patients which supported these conclusions. Ideally the two sides of the brain should work simultaneously to solve problems. When they do, the result is what Ornstein calls creative thinking or creative problem solving. What happens most often however, is that because of environmental and cultural factors, the two sides of the brain compete with one another. This causes frustration and a general inefficiency in the learning process.

According to Ornstein, in western society stimulus from the environment places too much emphasis on the left hemisphere of the brain, while eastern society provides an overload of stimulus for the right side of the brain. When inordinate emphasis is placed upon one mode or the other, one is suppressed; yet it continues to function independently. The hemisphere cut off from affecting overt behavior still maintains memory and emotion. The frustration of suppression may affect subsequent perception, which forms the basis for expectation and evaluation of future input.

> The connection between hemispheres is relatively weak compared to the connections within hemispheres, and it seems likely that each hemisphere treats the weak contralateral input in the same way in which people in general treat the odd, discrepant observations which do not fit with the mass of their beliefs; first they ignore it and then, if it is insistant, they actively avoid it.[29]

In studying which side dominates, it has been generally decided that

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[29]Ibid., p. 65.

the side which cares most about the outcome determines overt behavior. Here is where the stimulus from the environment becomes so important. If the stimulus is overbalanced from the outset, there seems to be little opportunity for producing an integrated, creative, problem solving mind. If an individual becomes so conditioned to using only one mode that the other mode cannot function at the conscious level, this not only hinders the individual's general efficiency in terms of natural resource for problem solving but may also interfere with processing in the appropriate system. Since Piaget states that the creation of a new and higher structure of learning is based upon the integration of accumulated knowledge in both the left and the right sides of the brain, one can see how the suppression of one causes the spiraling effect of the structures to break down. Thus, "A student's difficulty with one part of a curriculum may arise from his inability to change to the cognitive mode appropriate to the work he is doing."[30]

It seems apparent that the ideal synthesis of the lateral and intuitive modes which Ornstein speaks of are what Piaget was observing in children as they went through a learning process. The explanation for the breakdown of the learning process seems reasonable if one accepts the spiral theory of accumulated knwledge and the need for knowledge to be properly stimulated both internally and externally. Therefore, one can conclude that a curriculum must provide a balance between the analytical and the intuitive. Specific activities or strategies must be devised and initiated by the teacher to give the

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[30]Ibid., p. 45

student deliberate experience in using both means of problem solving. Less this sound too simplistic, it should be emphasized that all of the theorists referred to here acknowledge the human being as an extremely complicated creature who is made up of a vast array of systems operating simultaneously. But because they see two identifiable categories into which the systems can be integrated, there is a potential for the systems to reach a state of smoothly interacting structures. The systems are necessarily unstable and shifting in order to survive in what Lawson calls a dynamic, constantly changing environment and to attain what Piaget calls equilibrium, "the harmony between sensory information and accumulated knowledge; harmony between the individual and the environment."

A curriculum that is most efficiently designed to develop the child's potential for learning should be based on the following assumptions: (1) Learning is initiated internally and externally. (2) Human biological structures are designed to process information in a way that allows for integration of internal and external stimulus. (3) The human brain differentiates between analytical and intuitive knowledge. (4) Learning takes place most efficiently when the separate modes which process analytical and intuitive knowledge in the human brain are stimulated equally. The following chapter is a case study of a lesson plan based on these assumptions prepared and used by the writer.

CHAPTER IV

APPLICATION OF CONCEPTUAL APPROACH

The following is a discussion of the plan developed and used by the writer at the beginning of a U.S. History course for 8th grade students. In keeping with the philosophies previously stated by Newton, Locke, Pestalozzi and Herbart, the lesson is designed to teach from specific to general, simple to complex, and literal to abstract. The unit deals with exploration and discovery. The unit content includes explorations and discoveries of the 5th Century Irish, 12th and 13th Century Vikings and Eskimos, 15th Century Italians, 16th and 17th Century Portuguese and Spanish.

A conscious effort has been made to provide information and activities which will stimulate equally the left and right sides of the human brain. Goals intended to promote left mode thinking include: (1) To illustrate that there was a previous experience of exploration and discovery long before the glorious age in which Columbus came upon America. (2) To demonstrate that these early explorations exerted both positive and negative influences on the explorations that are most relevant to Americans. (3) To show the value of oral history as a viable source of historical data. (4) To teach students how to attempt separation of fact from fiction in oral history. (5) To document the value of personal history (diaries, letters, etc.) as viable sources of historical

data. The activities used in acquiring the factual information involve analyzing language, comparing, contrasting, and serial ordering. A synopsis of content has been prepared that reflects the stated goals.

Initially, the students are given information about the establishment of monasteries in Ireland around the 3rd and 4th Centuries. They learn that Irish secular society, along with most of the outposts of western Europe, was depraved and barbaric, thus creating a need for monasteries to be built apart from the main villages of the ordinary people. The concept is not unlike that of modern missionaries who go into primitive societies to spread their faith but refrain from actually sharing living space with the natives. Students learn that the Irish monks often travelled the sea routes between Ireland and the mainland of Europe and also used the sea as a source of physical and spiritual sustenance.

At this point, a detailed version of the Legend of St. Brendan is studied. The students trace the routes of Brendan's three voyages on three separate maps. Films are shown dealing with these geographical areas, then the students go back and study references made in the legend to such things as talking birds, volcanoes, mammoth tusked monsters, crystal columns, etc. The students try to guess what these things might have been in reality. They are then given information from Geoffry Ashe's account of the legend in which he speculates about the things that Brendan saw. The reason for the voyage as stated in the legend is discussed and the students are asked to decide how this might have influenced the tale as it was told to the world. The legend is

presented as a viable and important form of oral history, but one that must be dealt with very carefully.

The next group of people examined are the Vikings. The students study the family structure and history of the Vikings through the sagas of Eric the Red. Again oral history is stressed and is compared to the kind of oral history employed by the Irish. Religious, political, economic, and social factors are all considered in making distinctions between the two types of oral tradition.

In this way the student is prepared to compare the cultural factors of the Vikings to the Eskimo, the next group of people studied in the unit. The purpose of studying Eskimo culture at this point is to deal with native American cultures as nearly as possible as they were encountered by European explorers. Throughout the unit, modes of transportation and communication are stressed. This information is used in a culminating activity at the end of the unit.

The scene then shifts to Italy, the rise of the city-state, and the travels of Marco Polo. Emphasis is placed on reviewing the reasons for the rise of the city-state after the fall of the Roman Empire in western Europe and Italy's monopoly on trade in the Mediterranean. The journeys of the three Polos, father, uncle and son, are studied in detail because they provide interesting examples of how twists of fate influenced the development of history at a given point. For example, if it had not been for a small tribal war which caused the two elder Polos to detour from their standard route, they would never have gone to China. If there had not been a dispute over who was going to be Pope, the western world might not have missed out on a golden opportunity

to Christianize the entire eastern world. The Kublai Kahn had asked for one hundred of the finest minds in Christendom to explain their faith to him and his court. The shaky Pope sent three, of debatable virtue, all of whom turned back at the first sign of danger. Finally, if Marco Polo had not been caught in the middle of a civil war between Genoa and Venice and thrown into jail with a known author of the time, the Book of Marco Polo, which so influenced Christopher Columbus, might never have been written.

Next the class focuses on Prince Henry the Navigator to learn what motivated him to establish a school of navigation which not only presented the world with great advances in map-making and navigational instruments but also broke down the greatest barrier of all, superstition, leaving the way open to future exploration and discovery.

At this point, Alistaire Cooke's films, "America: A Personal History," Part I and Part II are shown. They give a good overview of Spanish and French exploration and settlement in the new world. Emphasis is not placed on students knowing about each explorer in depth, but Christopher Columbus is studied in detail. The class listens to a tape made from an excerpt of the television series, Ten Who Dared . The piece is a biographical account of Columbus's voyages to the New World. It provides ample material for the students to develop a character sketch of Columbus, which they do after listening to the tape. The purpose of this assignment is to stimulate students to form a picture of the kind of personality that would be interested in exploring the unknown world and to see this one man in human perspective

with assets and faults common to all men in any given time. Political, social, economic and religious motivations are always considered throughout the unit.

In a culminating activity the students are given a chart divided into three categories: transportation, communication, and political structure. Each category is divided along general chronological lines, 5th-13th Century; 14th-16th Century; 17th-20th Century. Through discussion the students fill in the chart with factual information. The teacher provides general information about dominant philosophies during each period. Once the pertinent information from each period is stated the students are asked to draw some general conclusions about the overall relationships between the three categories and the topic, exploration and discovery, and then to speculate about the future state of the categories as we continue to explore space.

As literal information is accumulated the emphasis moves from the left to the right mode of the brain. Goals which are intended to stimulate thinking for general or whole knowledge are as follows: (1) To illustrate that economic, religious , and political factors are dominant influences in any period of exploration and discovery. (2) To illustrate that institutions are extensions of the individual people who create them. (3) To illustrate that much of what is termed progress for mankind is not progress for individuals in human history. (4) To illustrate that people control the course of history by the choices they make with regard to given events. (5) To illustrate that cultural conflict is based upon relative values which are misunderstood by encountering groups.

Activities which teach to these goals are as follows: (1) Comparison of Viking and Irish traditions of oral history. (2) Comparison of Viking and Eskimo religious, economic, political, and social institutions. (3) Discussion of the Polos' decision to visit the Kublai Kahn when accidentally forced from their normal trade route. (4) Discussion of Marco Polo's decision to collaborate with the author with whom he was imprisoned in Italy. (5) Examination of the influence that the Italian monopoly had on Portugal and Spain's decision to seek alternate trade routes to China. (6) A character analysis of Christopher Columbus. (7) Overall review and discussion of materials studied in the unit with the intent of perceiving general patterns of history.

Integration of right and left mode takes place when the student uses the accumulated knowledge to make generalizations and draw conclusions or generalizations and to cite specific examples. In short, they should be able to reason either inductively or deductively. If the student can do this, then the teacher can feel confident that the student has learned the material content.

By intentionally balancing the content of a lesson plan to stimulate the left and right modes of the binary brain system the teacher has taught for concepts. A concept is defined as, "A mental image of a thing formed by generalization from particulars." The conceptual approach then is an inductive approach as originally advocated by Newton. Teaching particulars is only one side of the coin. One must not assume that the particulars will automatically work themselves into generalizations. As Piaget, Lawson, and Ornstein have illustrated, the individual must be given

a stimulus that motivates specifics to be fodder for generalization or they may lie dormant forever at the subconscious level and thus be functionally unlearned.

One of the difficulties in teaching history to very young people is that they have not lived long enough to accumulate a great deal of experience outside of their own immediate surroundings. Therefore, it is necessary to provide a curriculum that provides a broad base into which additional detail can be filtered as it arises. For example, in studying Columbus' voyage there is a very graphic description of the black, tangling weeds of the Sargasso Sea. The students can easily pick up on the idea that Brendan's account of a black sea filled with monsters was probably the same sea that kept the Portuguese sailors from travelling beyond the Canary Islands for over thirty years and made Columbus's sailors want to turn around and go home.

With this unit, the basis for studying the development of the American nation is established. A deliberate effort is made to point up political, religious, and economic values upon which the nation is founded. The material is presented so that students can begin to see specifically how history moves chronologically through time and that what people think and do are the catalysts for historical events.

CHAPTER V

CONCLUSION

The essential threads of the conceptual approach are dualism, balance, and relativity. An understanding of the learning process has developed out of the philosophies that recognized a universal paradox. Human existence is comprised of divergent forces which combine to create the whole. There is a oneness in human experience only if all the parts are balanced properly. Early philosophers observed this phenomena in pastoral nature. They saw that there were opposing points which served as catalyst for growth. Life was sustained by light and dark, cold and hot, wet and dry. The ideal climate was created when there was a synthesis of the two, neither too much nor too little of one or the other.

A sharpening of one's senses increased one's ability to observe nature outside of man. Soon it became apparent that there were certain consistent patterns which seemed to control the dualistic aspects of nature. The moon and stars moved in predictable patterns. Seasons came and went in consistent cycles. Life cycles were too regular to be accidental. At some point, physical phenomena had been set in motion.

Philosophers such as Sir Isaac Newton speculated that for every pastoral nature there must be a counterpart in human nature. Humans,

too, were part of a dualistic universe. Given free will, man was provided an abstract dimension to the physical dualism in his life. The physical opposites were young, old, man, woman, fat, skinny, tall, short, weak, strong. In each instance the ideal was the mean. On the abstract level man could choose between good and evil, callous or sentimental, wise or foolish. The achievable level in this life, was again somewhere in between.

The principle of human nature being nurtured best by a synthesis of opposing forces has significantly influenced the development of educational theory. Locke was one of the first to advocate beginning a child's education by determining his individual needs. Yet he recognized that the free will in the child must be tempered with a discipline, if the child was to achieve the golden mean that would make him a productive person in society. Further the individual was seen as the hope for mankind, but this presupposed the ability to curb one's free will.

Other educators, too, have emphasized balance in curriculum to best educate the child. Pestalozzi and Herbart both gave their children equal amounts of physical and intellectual stimulation. Attention and hard work were seen as necessary constraints in the learning process. Each man taught for factual and philosphical knowledge. Others like E.A. Sheldon and John Dewey followed in their tradition.

Contemporary thinkers have illustrated the dualistic nature in man by examining physiological structures which reflect that aspect of human character. In-depth studies have been conducted which help to

explain how man processes stimulus from a dualistic environment. Such studies indicate that the physical processing structures, like other physical phenomena, function ideally when there is balance. The binary brain structure allows man to think analytically and intuitively. If there is an inordinate emphasis on either mode, the learning process is impaired.

Under ordinary conditions the nature of the learning process is a paradox in that it is both absolute and relative. There seems to be a consistent line of thinking which implies that there is an innate, measurable motivation and potential for human beings to learn. But because human beings live in a changing environment necessary for providing stimulus for learning, that motivation and potential become relative. The child, barring physical defect, comes equipped at birth with an absolute binary brain structure designed to process relative stimulus from a dynamic environment. Modern educators are doing precisely what Newton suggested when he encouraged men to look at nature if they were to understand the essence of a thing. Educators look for the essence of how people learn by studying the physical brain, man in nature, and external stimuli which encompasses all of nature outside of man. The knowledge gained through these studies has not only helped teachers cultivate the minds of children purposefully but has also illustrated the necessity for the learning processes to be continually exercised throughout the life-time of an individual. Otherwise, the ability to think creatively may be reduced because of the failure to stimulate already existing learning structures. Perhaps

this is a clue as to why activity in old age is as essential,if a person is to remain vital in spirit, as it is in youth. In a word, age is a state of mind.

As one looks back through philosophies which have propagated teaching for concepts, one can see that the strategies employed have varied widely, but each has been based on a set of common assumptions about the nature of man and desirable goals for society. There is a universally shared belief in an individual will, capable of good or bad, as a source of determination for all mankind; that evil can be overcome according to man's will, given proper motivation; and that reason, properly honed, is the tool necessary to overcome destructive forces. The methods used to develop reason change, but the primary goals have remained much the same: to produce moral citizens who make up a moral society; to promote creative resolution to problems in a constantly changing environment; and to maintain progress in human history.

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