



**About  
Learning**  
*We Bring Learning to Life*



The Mission of About Learning  
is to offer 4MAT,  
a transformative cycle of learning,  
to the world for its adaptation.





## INTRODUCTION

For almost 40 years, the 4MAT Model has been empowering educators to create transformative approaches to teaching and learning. Administrators and teachers at all levels of education as well as leaders and trainers in the business and corporate community have been using the 4MAT Model of Learning to facilitate effective learning with their students and trainees.

4MAT's successful use requires the reorganization of instruction to employ a wide variety of learning methods and requires a re-design of instruction to maximize its impact on learners.

An organization's success rests on its learning ability. The 4MAT Model of Learning provides principals and teachers, leaders and trainers at all levels with a framework to guide learners in the use of their individual, inherent learning abilities in order to assimilate new demonstrable useful knowledge. In today's dynamic world information and skills are not static, learners need to move from a fixed mindset to one of growth.

As more educators and trainees embrace the 4MAT Model of Learning, they seek research that proves its effectiveness. The interest grows in the research basis that forms this model and the evidence-based research documenting its effectiveness.

### ***Historical Perspective of 4MAT***

This first section features the primary research theories and educational philosophies of those who form the base of the 4MAT Model. The work and insights of the researchers listed here have inspired the foundation of 4MAT regarding the nature of learning: The making of meaning, in a learner-centered, experiential cycle, through ordering and constructing knowledge of understandings not yet known, by naming experience in dialogue from individual internal frames of reference in a social process based on sharing power.

### ***The 4MAT Model***

The Model is described with the details of the eight steps.

### ***Some Latest Studies***

The final section is a compilation of some of the research from our first studies of 4MAT in 1985 to the present. These include some of the latest work being done in Saudi Arabia, Ankara University, Thailand and the School of Pedagogical Sciences at Mahatma Gandhi University. These were chosen as a cross-section of a typical sample from a much larger group.

For those interested, there is more information available on specific implementations of the 4MAT Model of Learning in K-8, high school and university settings. Also available is information on how a leading manufacturer of furniture, an international cosmetic company, a leading educational training and consultancy group and specific governmental agencies have implemented 4MAT in their training programs.

We are extending an open invitation to any interested persons considering research on 4MAT to avail themselves of this material and to contact Dr. Bernice McCarthy for any assistance that may be possible.



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# **The 4MAT Model Research**

## **1985 - 2018**

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## PART ONE: Historical Perspective

### Historical Perspective: Major Theories Modeled in The 4MAT System for Teaching Learning and Leadership

Bernice McCarthy's 4MAT® System is a learning and teaching model that combines the fundamental principles of long-standing theories of personal development with current research on human brain function and learning. This 4MAT Research Document briefly summarizes these theories and describes the nature of their contribution to McCarthy's model for teaching and lists some of the research available on its progress and promise from 1985 to 2018, K-12, Post Secondary and Corporate.

Prominent theories of personal development which have greatly influenced the ideology and validation of The 4MAT Model are summarized. The fundamental assumption of The 4MAT Model, that humans learn and develop through continuous, personal adaptations as they construct meaning in their lives, is derived from the work of John Dewey, Carl Jung and David Kolb and eight others. Included in this section are references to basic assumptions of Dewey and brief descriptions of Kolb's Experiential Learning Theory, and Jung's Theory of Individuation. In addition, eight other scholars learning theories formed a key part of McCarthy's learning in her K-12 teaching years, including work in special education and a principalship in a high school alternative program.

This document also synthesizes the historical evolution of the concept of hemisphericity which McCarthy combined with learning style in the 4MAT Model in 1982 with important applications for complete learning cycle experiences. McCarthy's inclusion of synthesis and analysis in each of the four learning cycle quadrants became a key factor influencing learning and teaching success.

The final section of this document, lists research on the 4MAT Model and its use in all levels of education as well as its now extensive use in corporate training.

The research studies are listed in chronological order and are presented for practitioners and consultants to assist them in their teaching and learning endeavors should they choose 4MAT.

We have included summary descriptions of the eight steps of Bernice McCarthy's 4MAT Model. Also Included in these descriptions of The Model are explanations of those concepts which, each in their own way, reinforce the seminal message of 4MAT,

***“that the essential connectedness of knowledge and experience can never be omitted without consequence to the development and individuality of the learner.”***





## The Kolb/McCarthy different naming of the Four Learning Styles

### Experience and Individuality in Learning

John Dewey

In 1916 Dewey wrote *Experience and Education*, in which he asserted that all learning required the transactional interaction between the individual and the environment. Dewey's biology-based theory made a case for learning by doing instead of learning by abstraction or rote in which he emphasized the testing of the practical consequences of ideas. For Dewey, experience, the interaction of the individual with the environment for all learning, is paramount.

In 1933 Dewey published *How We Think*. This book described his five-step method for thinking which involved: (1) reflecting upon a problem, (2) establishing the limits or characteristics of the problem in precise terms, (3) testing possible solutions and postulating a wide range of hypotheses, (4) considering possible outcomes and acting on these considerations, and (5) acceptance or rejection of the solutions. Dewey's stages of thinking were designed to systematize a "method" for working through each human experience as it arose.

It should be noted here that Dewey's five steps are present in the 4MAT Model in his exact order as the last five of eight steps of 4MAT. Dewey did not explicitly include, what McCarthy considers key in all instructional design, a conceptual connection to the direct experiences of the students, followed by analysis of that connection and then visualized by students personally; the 4MAT engagement process that brings the students through the first three steps of 4MAT to motivated reflection.

4MAT requires beginning all learning design with felt experiences that directly connect the conceptual learning, to the students' lives at all ages, levels and needs, in all content, and in both education and corporate enterprises.

This difference in Dewey and McCarthy is interesting as Dewey's philosophy of education implicitly emphasizes the importance of human experience as a gateway to human understanding all the way through the learning. 4MAT just makes this experiential process more explicit.

History credits John Dewey with the introduction of a pedagogy which unites the mind and the body of the learner through a method of thinking and doing, an experience he called the supreme art form... the art of education.

John Dewey is a significant contributor to the 4MAT System. His dictum that developmental education required the provision of experiences which inform the learner of the limits and contradictions of his/her way of constructing the world is modeled throughout the eight steps of The 4MAT System.

Also modeled as a guiding principle of 4MAT is the role of the teacher as one who fosters in the learner the engagement and motivation necessary to master the content. This is a primary teaching task.



Today, researchers are confirming the significance of personal experience in the deployment of brain function and cognitive abilities that expand for the lifetime of the individual. From this broader perspective, that cognitive potential is not hidden in the mind awaiting perfection; rather, it evolves and diversifies through use, it is clearly supportable that John Dewey's insights about the importance of experience in learning were accurate.

## **Experiential Learning Theory: A Lifelong Cycle of Learning and Development**

David Kolb

Another widely researched, experience-based theory of human learning and personal development is David Kolb's Experiential Learning Theory, also based on an expanded view of human intellectual capacity which involves testing ideas in actual experience. According to Kolb, human learning and personal development are synonymous processes which involve the continuous integration of a distinct set of independent systems that give meaning to life's circumstances.

Kolb specifically names these systems (or modes) as follows: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptual (AC), and Active Experimentation (AE).

At the heart of Kolb's theory is the conviction that learning is a continually recurring process from Concrete Experience to Reflective Observation to Abstract Conceptualization to Active Doing.

Thus Kolb's Experiential Learning Model describes a process through which the four modes of human experience are engaged at various levels of complexity to create more complete levels of understanding. For Kolb, the adaptive engagement between and among the modes of concrete experience (CE), reflective observation (RO), abstract conceptualization (AC) and active experimentation (AE) is prerequisite to learning and personal development. For example, one might view a problem exclusively from the perspective of personal experiences or might view a problem through verification.

The decision to trust one adaptive strategy over the other is personal. One attempts to resolve the problem by reflecting upon it and designing a plan, or by manipulating and testing applications until a solution can be found. Balance and experience with all four of these adaptive learning modes is the basis of Kolb's theory. Simply stated, according to Kolb, "individuals expand their learning and adaptive processes through exercising these four modes."

Additionally, according to Kolb, when contrasting world views are consistently resolved through the suppression of one mode and the reliance upon another, learning tends to become automatized around the trusted mode and limited in those areas which are suppressed. The result is a preferred "style" for learning. Kolb asserts, "over time, accentuation forces operate on individuals in such a way that the dialectic tensions between these dimensions are consistently resolved in a characteristic fashion." Each of us in a unique way develops a learning style that has some weak and strong points.



## Principles of 4MAT modeled in Kolb

McCarthy takes the four parameters of David Kolb's Experiential Learning Theory, his cycle of interaction between four points:

Concrete Experience (CE) and Reflective Observation, (RO)—  
Reflective Observation (RO) Abstract Conceptualization (AC)—  
Abstract Conceptualization (AC) and Active Experience (AE)—  
Active Experimentation (AE) and Concrete Experience (CE)—  
and their subsequent diverse modes of personal adaptation,

and renames these favored comfort preferences in the learning cycle, Learning Styles: Type One, Two, Three and Four Learners.

This the theoretical basis for The 4MAT System for Teaching, Learning, and Leadership.

McCarthy credits Kolb for the structure upon which she built her model. And while McCarthy has used Kolb's theory to incorporate other theories, each new level was an extension of rather than departure from, Kolb's original dictum, that individuals expand their adaptive processes through exercising them.

It is noteworthy here that the functions and descriptions of the four adaptive modes described in Kolb's Experiential Learning Theory have survived the test of thirty-eight years of implementation. Applying Kolb's theory, McCarthy demonstrates that her model effectively orchestrates a repertoire of specific teaching/ learning sets which balance tensions between concrete experiential and abstract conceptual orientations. The comprehensive quality and depth of these learning sets, especially their articulation in practical language, are McCarthy's contribution to the expansion of Kolb's theory.

McCarthy's model also provides for balance between reflective observation and active experimentation through specified variations in teacher/learner interactions. Learning by validating preferred modes of adaptation while stretching to less preferred modes are clearly unifying principles in both Kolb's and McCarthy's models.

McCarthy resists the temptation to classify learners in terms of a single style. The key issues are the level of differentiation (or preference) and juxtaposition of each of four contrasting ways of understanding and acting on life's circumstances. Each of the four preferences is considered separately in light of its degree of reliance upon reflective or active processing. In essence, McCarthy is saying that individual learning style is the degree to which individuals differentiate and use each of these four ways of knowing. Style is the relationship between and among these modes as much as it is the most preferred.

The inclusion of hemisphericity as a further determinant of individual differences in learning is a further extension of by McCarthy.



## Hemisphericity and 4MAT

By identifying the specific ways in which the human brain deals with different kinds of information and experience, researchers are uncovering the biological roots of human learning. Brain studies now influence the world view all the way from Sperry and Bogan to Pinker and Kahneman. These findings create the context for a new more complete way of knowing ourselves, and balancing our imaginative, logical brain.

The following premises are incorporated into the 4MAT Model:

1. The hemispheres of the human brain process information and experience in identifiably different ways;
2. The neural organization in each hemisphere is complementary yet different.
3. The corpus callosum, the bundle of nerve fibers connecting the two hemispheres of the brain, is part of the way both brain modes integrate.
4. Hemispheric disposition is quantifiable.
5. Individual preferences for hemispheric integration have clear relationships to cognitive style and learning.

### Differences in hemispheric function

#### **Left ( Analysis)**

Verbal  
Digital  
Sequential  
Rational  
Convergent  
Deductive  
Realistic  
Directed  
Explicit  
Objective  
Successive  
Abstract  
On the balcony  
Slow Thinking

#### **Right (Synthesis)**

Nonverbal  
Visuo-Spatial  
Simultaneous  
Analogical  
Divergent  
Metaphorical  
Imaginative  
Free  
Tacit  
Subjective  
Random  
Concrete/experiential  
On the field  
Fast Thinking (Kahnman)

It is the balance teachers and trainers should seek and the 4MAT Model incorporates this balance in each of the four quadrants.

Bernice McCarthy believes that polarized classification abuses of the hemisphericity research do not negate the need for teachers to understand and apply this research. According to McCarthy, teachers need to intentionally design instruction to incorporate the processing skills of both hemispheres in order for learning to be complete. They must understand the left and right mode functions of the brain and design instruction mindfully in each of the four quadrants.



## **Individuation: A Theory for Growth and Personal Development**

Carl Gustav Jung

Jung's Theory of Personality Types, like Kolb's Experiential Learning Theory is a holistic theory of human development which assumes the presence of measurable and consistent individual preferences for making sense of the world. Jung postulates that much apparent random variation in human behavior is actually orderly and consistent, being due to certain basic differences in the ways people prefer to use modes of perception and judgment.

For classification of the limitless variations in individual behavior Jung relies upon what he calls the four basic functions: sensing, thinking, feeling and intuition. These functions are opposing modes for making sense of the world. According to Jung, sensing refers to taking in the observable by way of the senses, which tells you something exists; thinking, a term used to define logical decision-making processes, tells you what something is; feeling, a term for the process of appreciation in terms of subjective/personal value, tells you whether something is of value or not; and intuition, a term used for apprehension of meanings, relationships and possibilities by way of insight, tells you when something connects, where it came from and where it is going.

Jung also emphasized that individuals continued to differentiate their personal type (a term Jung used for preferred functions) throughout their lives. According to Jung, a mature individual is one who has developed command of all four functions, elevating two of the four functions to a dominant and auxiliary status and differentiating the use of and respect for the remaining less preferred functions. This process, called Individuation, is a cornerstone of Jung's work. Jung used the terms extroversion and introversion to describe two basic attitudes toward the environment. Extroverts are individuals who focus attention on objects and people in the environment, while introverts focus on the consolidation of energy within themselves.

Kolb and McCarthy named these attitudes Active Experimentation and Reflective Observation.

A compendium of research findings on Jungian Type as measured by the Myers-Briggs Indicator is available through The Center for the Applications of Psychological Type (CAPT), Gainesville, Florida.

### **Principles of 4MAT modeled from Jung**

Jung's Theory of Psychological Type, specifically his concepts of Individuation, and differentiated functions are modeled throughout The 4MAT System for Teaching, Learning, and Leadership. For example, in 4MAT, learning type is described as the order and juxtaposition of four possible type preferences. These preferences are then reported relationally from most preferred to least preferred. In this way individuals report their preferences for dominant (most preferred), support or auxiliary (second most preferred), third and least preferred.

The message here, modeled from Jung is that continued personal development requires the differentiation of less preferred functions and the balance of the individual's type. If Kolb's cycle represents the outer structure of the 4MAT Model, Jung's theory adds text and additional form inside the cycle.



## **The 4MAT System for Teaching Learning and Leadership:**

Bernice McCarthy, drawing heavily upon these brain studies and grounded in the work of John Dewey, David Kolb and Carl Jung, and more has created a pedagogical model which assumes that individuals learn in different yet identifiable ways, and that (engagement with a variety of diverse learning sets results in higher levels of motivation and performance.

**The Four Quadrants**, combining the Perceiving Dimension from Feeling to Thinking, with the Processing Dimension from Reflecting to Acting.

Also, statistically significant relationships have been established between 4MAT learning types as measured by the Learning Type Measure (LTM) and the functions and attitudes of Jungian typology such as Feeling, Sensing, Thinking, Intuition, Extroversion and Introversion. For example, McCarthy's Type One Learner has been statistically correlated with Jungian "Feeling types," Type Two with "Thinking types," Type Three with "Sensing types," and Type Four with "Intuitive types." There is also a significant correlation between the Watching score on the LTM and Introversion and between the Doing score and Extroversion. Types One and Four also report highest means on Perception and Types Two and Three highest means on Judgment as measured by the Myers-Briggs Type Indicator (MBTI).

The Kolb Learning Style Inventory (LSI) and the Myers-Briggs Type Indicator (MBTI) were both used to norm the McCarthy Learning Type Measure. (LTM).



## The Liminal Scholars who form the foundation of the 4MAT Learning Cycle

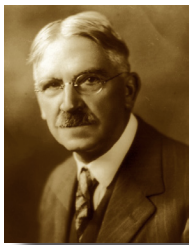
liminal | limenl |

1. of or relating to a transitional or initial stage of a process.
2. occupying a position at, or on both sides of, a boundary or threshold.



**Kurt Lewin: 1890-1946**  
*The Cycle Stage Model of Change*

Founder of American Social Psychology. The integration of theory and practice. Discovered that learning is best facilitated in an environment where there is a dialectic tension and conflict between immediate, concrete experience and analytic detachment. There is dialectic tension throughout 4MAT.



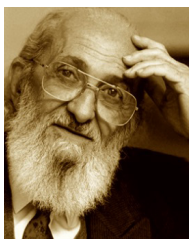
**John Dewey: 1859-1952**  
*Knowledge and Experience Education*

The continuity of experience is a powerful truth of human existence, central to the theory of learning. Every experience both takes up something from those which have gone before and modifies in some way the quality of those who come after.



**Carl Jung: 1875-1961**  
*Individuation Personality Types*

Jung defined qualities of personality types and was one of the first people to define introversion and extraversion in a psychological context, i.e., the 4MAT process dimension of reflecting versus acting. The Myers-Briggs Typology was developed from Jung's theory of Psychological Types and was one of the instruments used to norm the 4MAT Learning Type Measure (LTM).



**Paulo Freire: 1921-1997**  
*Naming Experience in Dialogue*

The educational system is primarily an agent of social control, We must change this by instilling critical consciousness which is, the active exploration of personal experiential meaning of abstract concepts through dialogue.



**Jean Piaget: 1896-1980**

*Constructivism*

The learning process as a dialectic between assimilating experience into concepts and accommodating concepts to experience, the 12 o'clock to 6 o'clock movement in the 4MAT Cycle. In addition, his work on epistemology, the relationship between the structure of knowledge and how it is learned, by ordering it, moving from feeling to thinking, and then using it, in both old and new ways--Constructivism.



**David Kolb: 1939—**

*Experiential Learning Theory*

Developed the Experiential Learning Model composed of four elements:

- concrete experience, • observation of and reflection on that experience, • formation of abstract concepts based upon the reflection, • testing the new concepts

These four elements are the essence of a spiral of learning that can begin with any one of the four elements, but typically begins with a concrete experience. Kolb's Learning Styles Indicator (LSI) was one of the instruments used to Norm the 4MAT Learning Type Measure. (LTM)



**William James: 1842-1910**

*Dual Knowledge Theory: Unconscious and Controlled*

Knowledge is continuously derived from and tested in the experiences of the learner. Feelings are the germ and starting point of cognition. To know means that we have become willing to turn away from "precious possessions" in behalf of a grasp of understandings we do not yet own.



**Carl Rogers: 1902-1987**

*Self Actualization Through Experience*

One of the founders of the humanistic approach to psychology. People react to the continually changing world of experience. It is their reality. The best vantage point for their understanding behavior is from the internal frame of reference of the individual.





**Lev Vygotsky: 1896-1934**  
*Proximal Zone of Development*

Learning is a social process, and the process is shaped by social development, in collaboration with more capable peers. That is where learning occurs, with interactions with others, —the dialectical approach, that is, admitting the influence of nature on man while asserting that man in turn affects nature.



**Mary Parker Follett: 1868-1983**  
*Learning in Relationship Power with, Not Power over*

A management consultant, philosopher, and pioneer in the field of group dynamics. She believed in the necessity of participatory, integrative democracy. She believed the boundaries of a person's identities are effected by the society around them, and that society in turn is effected by the identities of the people within it. Thus the self and the society, according to Parker, are in a cycle in which they constantly help to create one another.



**Robert Kegan: Born 1946**  
*Learning as the Making of Meaning*

American developmental psychologist—Professor in Adult Learning and Professional Development at Harvard Graduate School of Education, where he taught for forty years until his retirement in 2016.

“Learning is the making of meaning.

Making what was subject into object so we can have it, rather than be had by it, is the most powerful way I know to conceptualize the growth of the mind.

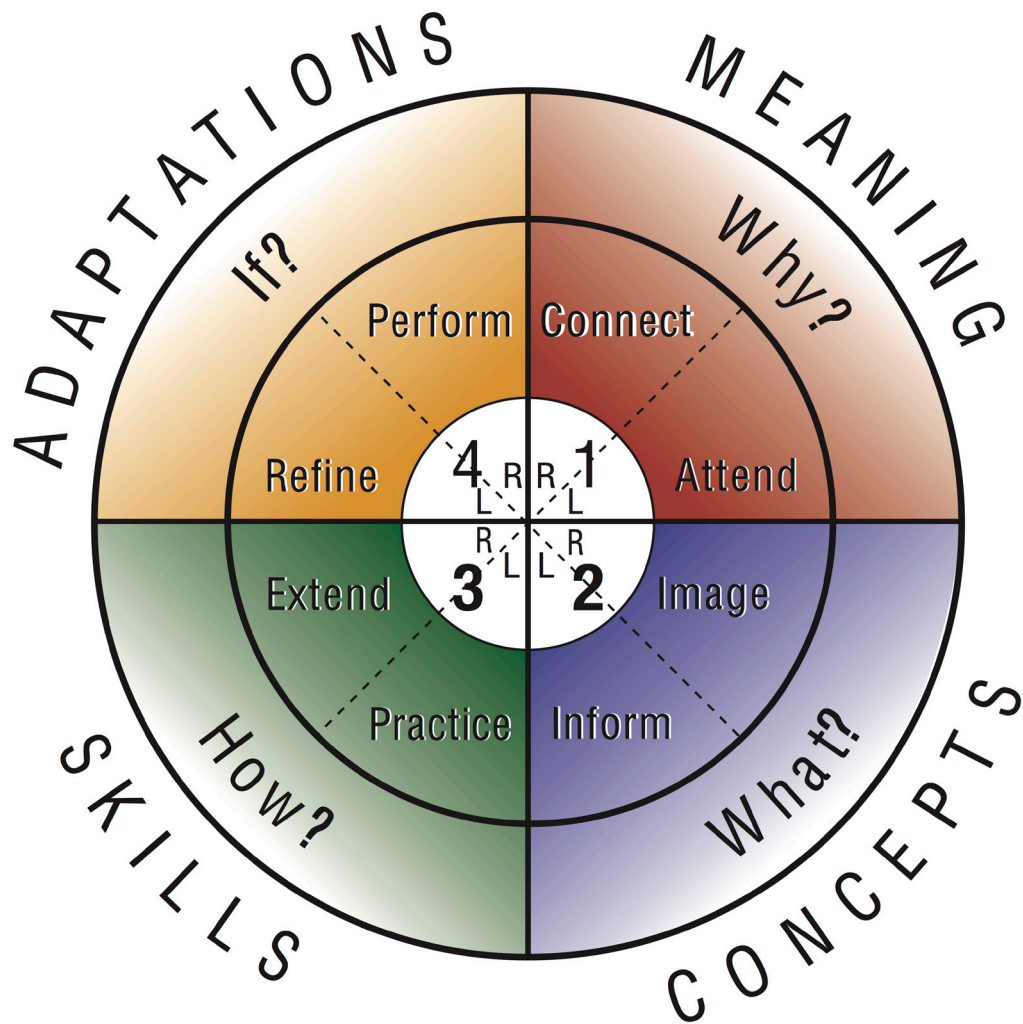
When humans emerge from meaningful experiences and ponder them, then see them as separate so they can understand and relate to them, they learn.

Making what was subject into object so we can have it, rather than be had by it, is the most powerful way I know to conceptualize the growth of the mind.”





## PART TWO: The 4MAT Model





*“The common facts of today  
are the product of yesterday’s research.”*

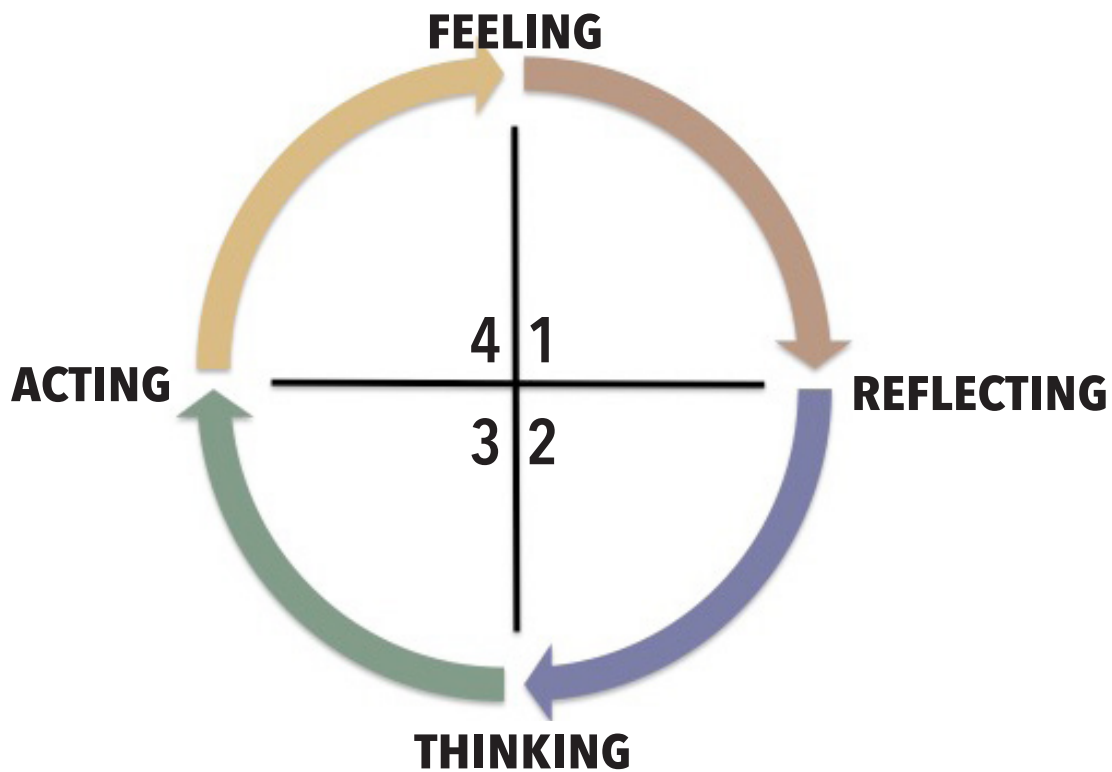
*Duncan McDonald*



## The 4MAT System for Teaching Learning and Leadership: Bernice McCarthy's 4MAT Model

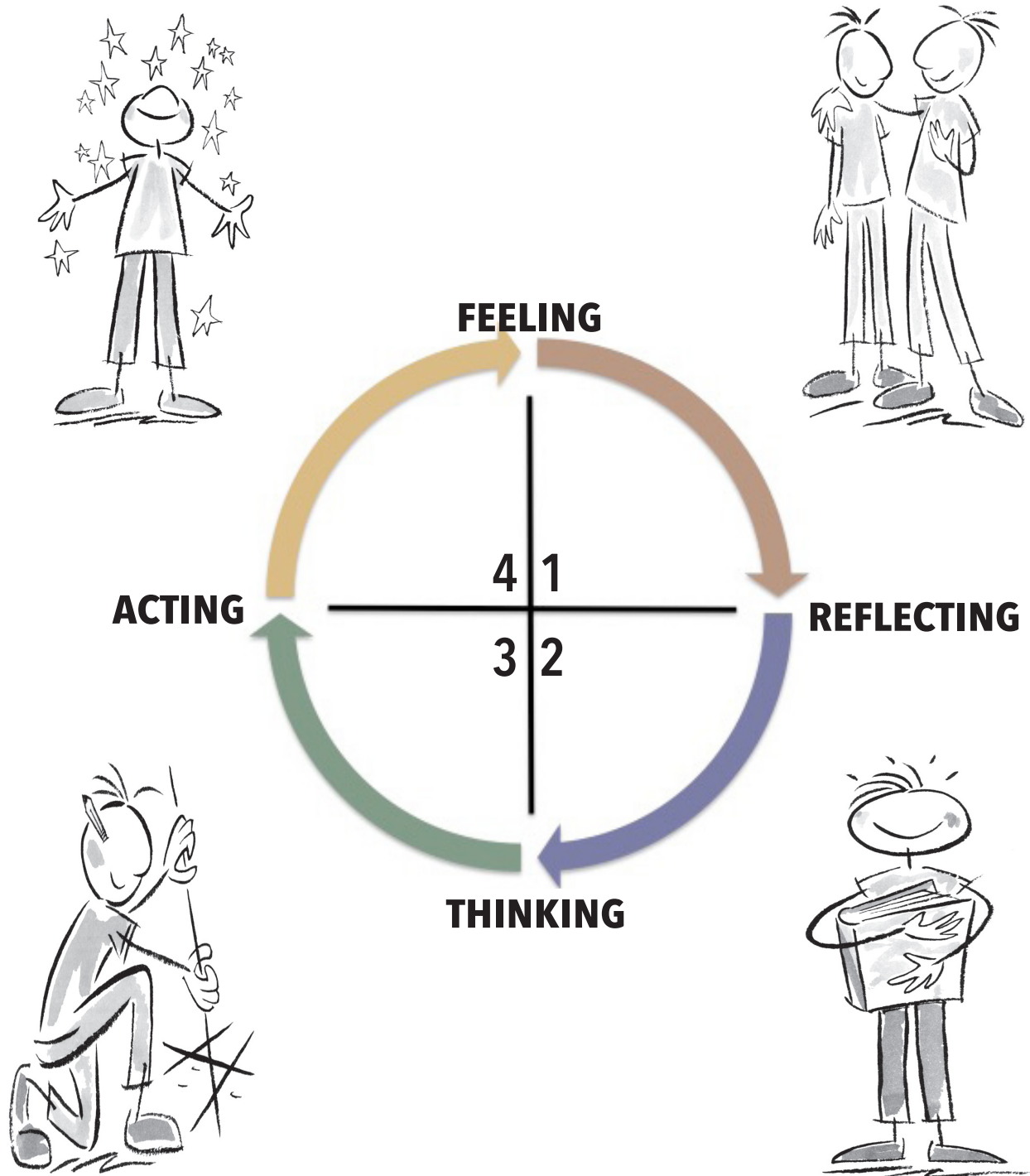
Bernice McCarthy, drawing heavily upon these brain studies and grounded in the work of John Dewey, David Kolb and Carl Jung, and more has created a pedagogical model which assumes that individuals learn in different yet identifiable ways, and that (engagement with a variety of diverse learning sets results in higher levels of motivation and performance.

**The Four Quadrants**, combining the Perceiving Dimension from Feeling to Thinking, with the Processing Dimension from Reflecting to Acting.



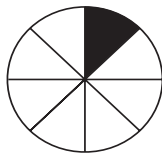


Together, perceiving and processing describe the whole range of the learning experience.





McCarthy's 4MAT System, an eight step model for teaching, is summarized as follows:



### ***Step One – Quadrant 1 Right***

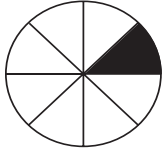
The first step of The 4MAT System is designed to engage the learner in a concrete experience which leads to a search of prior knowledge and prior experience. This search is designed to create an interactive group dialogue which connects what the learner already knows and believes to what the teacher intends to teach. In this dialogue there are no correct answers. Learners experience and compare their perceptions of their existing state of knowledge and work cooperatively to create an overall learning set from which to proceed. In this step the teacher encourages diversification of ideas, dialogue and participation. Note McCarthy's application of Kolb's concrete experience and reflective modes for making sense of the learning environment, as well as the engagement and encouragement of subjective valuation, Jung's feeling function. This step is also designed to encourage relational, symbolic thinking which is a right hemispheric function.

Objective: Connect to the Experience

Suggestions for teachers:

- Connect students directly to the concept in a personal way
- Capture students' attention by initiating a group problem-solving activity before delivery of instruction
- Begin with a situation that is familiar to students and builds on what they already know
- Construct a learning experience that allows diverse and personal student responses
- Facilitate the work of cooperative teams of students
- Elicit non-trivial dialogue from students

Evaluation: Engagement, participation in collaborative dialogue and generation of ideas.



### ***Step Two— Quadrant 1 Left***

The second step of McCarthy's 4MAT System, quadrant one left, is designed to add process judgment to the perceptions and dialogue generated in step one. In this teaching set, the teacher engages student reflection upon their existing level of their knowledge and experience to determine if their opinions and beliefs are supportable. The emphasis here is not to qualify or bring closure to student thinking. In quadrant one (right and left) the goal is engagement.

However, in quadrant one left the teacher's role is to assist student as they demystify and pattern their thinking. In quadrant one left, beliefs and opinions begin to evolve into organizers and structures for future thinking and theory building. This phase of The 4MAT Cycle emphasizes left hemispheric thinking and therefore has as its goal the imposition of structure.

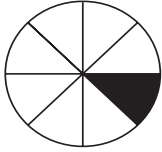
Objective: Examine the Experience

Suggestions for teachers:

- Guide students to reflection and analysis of the experience
- Encourage students to share their perceptions and beliefs
- Summarize and review similarities and differences
- Establish a positive attitude toward the diversity of different people's experience
- Clarify the reason for the learning

Evaluation: The quality of students' analyses of their collective subjective world of experience. Students ability to explore stated feelings by listening, listing, patterning, prioritizing, stating their own reflections.





### ***Step Three— Quadrant 2 Right***

Step three of the 4MAT System is designed to create a context for the learner to represent the subjective nature of his/her existing knowledge as a preparation for the validation and analysis of ideas. In this step learners are encouraged to symbolize, in as many modalities as feasible, their present state of understanding of the subject matter. Image making, central to this step, is a right mode activity. The emphasis here is the expansion of representations of meaning.

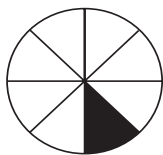
However, this step requires the learner to begin to shift from reflective experience to reflective thinking. The teacher's role here is to draw attention to aspects of structure and objectivity implicit in the students representations of what they know.

Objective: Integrate Personal Experiences into Conceptual Understanding

Suggestions for teachers:

- Provide a metaview, lifting students into a wider view of the concept
- Use another medium (not reading or writing) to connect students' personal knowing to the concept (i.e. visual arts, music, movement, etc.)
- Involve learners in reflective production that blends the emotional and the cognitive
- Transform the concept yet to be taught into an image or experience, a “sneak preview” for the students
- Deepen the connection between the concept and its relationship to the students' lives
- Relate what the students already know to what the experts have found

Evaluation: Quality of student production and reflection



### ***Step Four— Quadrant 2 Left***

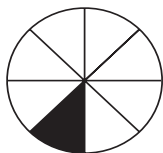
Step four of the 4MAT System engages students in objective thinking. The emphasis here is analysis of verifiable concepts, facts, generalizations and theories. The role of the teacher is to present information and experience in complete and systematic ways. The good “two -left” lecture builds upon the personal connections established in quadrant one to foster conceptual thinking. This is a left mode teaching set. Note: This is McCarthy’s application of Kolb’s abstract conceptual, reflective mode as well as Jung’s thinking function.

Objective: Define Theories and Concepts

Suggestions for teachers:

- Provide “acknowledged body of knowledge” related to the concept
- Emphasize the most significant aspects of the concept in an organized, organic manner
- Present information sequentially so students see continuity
- Draw attention to important, discrete details; don’t swamp students with myriad facts
- Use a variety of delivery systems: interactive lecture, text, guest speakers, films, visuals, CAI, demonstrations, etc. when available

Evaluation: Teacher verbal and/or written checking for student understanding.



### **Step Five— Quadrant 3 Left**

In step five of the 4MAT System the emphasis shifts from acquisition and assimilation to testing and adaptation. Students now take the lead to apply what has been taught. In quadrant three left the goal is reinforcement and diagnostic evidence of the student's ability to apply the concepts taught. The teacher's role here is coaching and assisting as students refine their ability to find applications of their ideas.

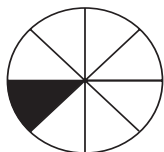
This teaching set engages Kolb's abstract concepts in action and Jung's extroverted sensing functions. It also models Dewey's idea that knowledge must be tested in the environment. Because the emphasis of this teaching/learning set is left mode, correct answers and student products which demonstrate their ability to apply the concepts are important here.

Objective: Working on Defined Concepts (Reinforcement and Manipulation)

Suggestions for teachers:

- Provide hands-on activities for practice and mastery
- Check for understanding of concepts and skills by using relevant standard materials, i.e. worksheets, text problems, workbooks, teacher prepared exercises, etc.
- Provide opportunities for students to practice new learning, perhaps in multi-modal ways (learning centers, games fostering skills development, etc.)
- Set high expectations for skills mastery
- Use concept of mastery learning to determine if re-teaching is necessary and how it will be carried out
- Have students create additional multi-modal practice for each other

Evaluation: Quality of student work, perhaps an objective quiz.



### **Step Six— Quadrant 3 Right**

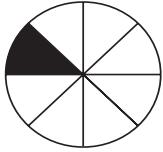
Step Six of The 4MAT System exemplifies John Dewey's idea of the student as a scientist. In this learning set the student tests the limits and contradictions of his/her understanding. The teacher's role is to encourage students to take the application of learned ideas to more sophisticated, personal levels. Students are encouraged to develop their own applications which demonstrate that they understand and can apply what has been learned. Project work is the essence of this phase of the 4MAT Model. The right mode emphasis in this learning set is designed to encourage students to create personal applications their experiences with the ideas learned.

Objective: "Messing Around" (Adding Something of Themselves)

Suggestions for teachers

- Encourage tinkering with ideas/relationships/connections
- Set up situations where students have to find information not readily available in school texts
- Provide opportunity for students to design their own open-ended explorations of the concept
- Provide multiple options so students can plan a unique "proof" of learning
- Require students to organize and synthesize their learning in some personal, meaningful way
- Require students to begin the process of planning how their project will be evaluated, identifying their own criteria for excellence

Evaluation: Students on-task behavior and engagement in their chosen options.



### **Step Seven— Quadrant 4 Left**

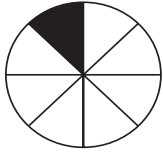
Step seven of The 4MAT System requires the learner to critically examine the place of the newly acquired knowledge and experience in his/her existing world view. The central issue here is what new questions do I have and what must be done to integrate this learning into a meaningful conceptual subset. Working alone or preferably in pairs and triads, learners in this learning set edit and refine their work. They also face and resolve contradictions implicit in the tension between new and earlier schema. The teacher's role here is to guide the refinement of the old schema and encourage the formation of a more complete perspective. Note the requisite of this step to objectify intuition.

Objective: Evaluating for Usefulness and Application

Suggestions for teachers:

- Give guidance and feedback to students' plans, encouraging, refining, and helping them to be responsible for their own learning
- Help students analyze their use of the learning for meaning, relevance, and originality
- Maintain high expectations for completion of chosen options
- Help mistakes to become learning opportunities
- Summarize by reviewing the whole, bringing students "full circle" to the experience with which the learning began

Evaluation: Students' willingness and ability to edit, refine, rework, analyze, and complete their own work.



### ***Step Eight— Quadrant 4 Right***

The essence of step eight in The 4MAT System is integration, celebration and closure. In this, the last of McCarthy's learning sets, the learner returns to the place where he/she began, the self, and integrates the learning experience into a slightly different, personally held world view. This is the step where presentations are given, where poems are recited, where letters are mailed and research reports submitted. The teacher's role is to join in the celebration and facilitate entry into the next unit of study.

Objective: Doing it Themselves and Sharing What They Do with Others

Suggestions for teachers:

- Support students in learning, teaching, and sharing with others
- Establish a classroom atmosphere that celebrates the sharing of learning
- Have opportunity for students to practice new learnings
- Make student learning available to the larger community, i.e. books students write are shared with other classes; students report in school paper; student work is displayed throughout the school; etc.
- Leave students wondering (creatively) about further possible applications of the concept, extending the "what ifs" into the future

Evaluation: Students ability to report and demonstrate what they have learned. Expressions.

31



## 1985

Author: Benezra, Susan Horner

Title: Bernice McCarthy's 4MAT Learning Style Adaptations in Middle School Life Science

School: Suburban Middle School in St. Louis County, Missouri

Date: 1985

Abstract: The purpose of this study was to determine the effect of The 4MAT System on the achievement performance of middle school students. Using seventh grade life science classes in a suburban St. Louis County middle school, the effect of McCarthy's 4MAT System was studied. Comparisons of pre and post achievement scores on a district criterion-reference test indicated improvement in science achievement for all groups. Results of these comparisons also indicate an in positive student comments and greater elaboration of projects.

## 1986

Author: Young, Jr., Donald Blakeslee

Title: Administrative Implications of Instructional Strategies and Student Learning Style Preferences on Science Achievement of Seventh Grade Students

School/Degree: University of Hawaii/Ed.D.

Year: 1986

Abstract: The study demonstrated that using a variety of instructional strategies in a preplanned sequence in science significantly affects student achievement of basic thinking skills, verbal creative thinking, and figural creative concepts, regardless of sex, for students of all learning style preference, confirming McCarthy's 4MAT model of teaching hypothesis.

The study has significant implications for school administrators in the areas of staff development, curriculum development, supervision, and evaluation. Recommendations for further research include replication with other students, other grade levels, and other subject areas.



Author: Wilkerson, Rhonda Morgan

Title: An Evaluation of the Effects of the 4MAT System of Instruction on Academic Achievement and Retention of Learning (Hemisphericity)

School/Degree: The University of North Carolina at Chapel Hill/Ph.D.

Date: 1986

Abstract: The purpose of this study was to evaluate the effects of The 4MAT System, a method designed to address learning styles and hemispheric preferences, on (a) academic achievement and (b) retention of learning. Also examined were (a) students' interest in the content of instruction, science and attitudes toward the unit of study, and (b) teacher perceptions regarding the instructional approaches and student behavior.

The subjects were 50 randomly selected students who attended a public school in the Piedmont region of North Carolina. The students were taught eight one hour lessons on simple machines. The experimental group was taught using The 4MAT System; the control group was taught using a textbook approach.

After completion of the unit, a two-part achievement test was administered to the two groups. Part A measured achievement classified as knowledge comprehension, application, and analysis; Part B measured achievement classified as synthesis and evaluation. Group means on Part A were compared using a one-factor analysis of variance; significant differences were found favoring the 4MAT group ( $F_{1, 44} = 4.06$   $p < .05$ ). Student performance on Part B was scored by raters; group means were compared using a one-factor analysis of variance. There were no significant differences between the means on Part B ( $p > .05$ ).

Thirty-five days after the conclusion of the unit, the same form of the test was administered to both groups. Group means on Part A were compared using a one-factor analysis of variance; significant differences were found favoring the 4MAT group ( $F_{1, 46} = 10.10$ ,  $p < .05$ ). Student performance on Part B was compared using a one-factor analysis of variance; no significant relationship was indicated ( $p > .05$ ).

Students' interest in science and attitudes toward the instructional activities were examined using journals and a questionnaire. An analysis of the data indicated that students in the 4MAT group were more interested in the unit, had a more positive attitude toward the lessons, and demonstrated more on-task behavior than did the students in the textbook group.



## 1986

Author: Jacobsen, Gary-Hans

Title: Incorporating Learning Styles in Mastery Learning Classrooms

School/Degree: Montana State University/Ed.D

Date: 1986

Abstract: During the first semester of the 1986-87 school year, the researcher conducted an experiment in the Colstrip Public Schools in Colstrip, Montana. Six teachers, representing the subject areas of math, geography, art, industrial arts and language arts were chosen to participate in this study. Each teacher taught an experimental class and a control class. The teachers incorporated learning styles into initial instruction, using Bernice McCarthy's 4MAT System in the experimental group.

Based on this analysis, the researcher concluded that by incorporating learning styles into initial instruction in mastery learning classrooms, the number of remediations necessary for mastery could be significantly reduced.

## 1987

Author: Szewczyk, Lester

Title: Effects of 4MAT, an Experientially-Based Teaching Method Upon Achievement and Selected Attitudinal Factors of High School Geometry Students

School/Degree: Northern Illinois University/Ed.D.

Date: 1987

Abstract: This study considers the following question: What are the effects of 4MAT, an instructional system integrating experience and perceptual preference upon achievement, attitude, and enrollment intention in advanced mathematics courses of students in secondary school geometry classes?

To investigate this question, four intact geometry classes (80 subjects) from a medium-sized high school near Chicago were assigned to one of two groups, experimental or control, and taught for one semester using either 4MAT processes or traditional methods, respectively.

Significant main effects indicated that: (1) the experimental group substantially outperformed the control subjects on the second-semester final examination in geometry; (2) there was differential achievement with respect to learning style classification; (3) post-test attitude factor scores were, to some extent, dependent upon treatment group, gender, SOLAT and LSI; and (4) active-processors differed by treatment group in terms of their enrollment patterns.

1987

Author: Bowers, Patricia Shane

Title: The Effect of the 4MAT System on Achievement and Attitudes in Science

School/Degree: The University of North Carolina at Chapel Hill/Ph.D.

Date: 1987

Abstract: The purpose of this study was to investigate the effects of the 4MAT instructional system on achievement and attitudes in science. Fifty-four academically gifted sixth grade students in three schools in the Chapel Hill-Carrboro (North Carolina) City Schools were randomly assigned to two groups: a 4MAT Group or a Restricted-Textbook group that utilized only left-hemisphere activities. Both groups were taught a three-hour unit on Newton's First Law of Motion.

Significant differences favoring the 4MAT group were found when analyzing the unit-specific statements. Significant differences favoring the Restricted-Textbook group ( $F(1,52) = 5.33, p < .05$ ) were found when analyzing the unit-specific statements. Significant differences favoring the Restricted-Textbook group ( $F(1, 52) = 5.33, p < .05$ ) were found when analyzing the statements about science in general.

1987

Author: Spatz, Thea Siria

Title: A Comparison of Two Programs for Teaching Breast Self-Examination to Women

School/Degree: University of Arkansas/Ed.D.

Date: 1987

Abstract: Middle-aged and elderly female members of Home Demonstration clubs participated in a study that compared two methods of teaching breast self-examination (BSE) to a control group. The 4MAT presentation ( $N = 63$ ) addressed four learning styles and brain dominance functions. The American Cancer Society (ACS) presentation ( $N = 53$ ) used a traditional lecture/discussion format. The Control group ( $N = 63$ ) attended a club presentation unrelated to cancer or BSE. The materials and information used in the two BSE presentations were the same; the method of presentation differed.

ANOVA's and Scheffe tests showed that the 4MAT group was significantly better than the ACS group in knowledge, both in learning and in retention. The 4MAT group was significantly better than the Control group in knowledge (learning and retention), practice (retention), confidence (learning and retention), belief (learning), and intent (learning). The ACS group was significantly better than the Control group in knowledge (learning and retention), confidence (learning and retention) and intent (learning).



## 1988

Author: Lieberman, Marcus

Title: Report on the Fairfax County Area III 4MAT Geometry Project

School Fairfax County Public Schools, Fairfax, Va

Date: 1988

Abstract: Students taught with 4MAT showed significantly greater knowledge of middle school and high school geometry, and middle and high school science concepts than comparison groups. Students gave significantly more applications of knowledge learned than comparison groups. Students enjoyed learning the concepts more than comparison groups.

## 1989

Author: Miller, Jane

Title: Transferring Teaching Skills and Strategies from the Inservice Workshop into Practice in the Classroom: An Evaluation of One District's Experience

School/Degree: State University of New York at Buffalo/Ed.D.

Date: 1989

Abstract: The purpose of the study was to explore the degree to which teachers learned and transferred teaching skills and strategies from the workshop into practice in their classroom. The intervention studied was the 4MAT teaching model. The population consisted of 353 K-12 teachers. The hypotheses tested were the following: the greater the degree of exposure to the system, the more likely the teachers would be (1) to express positive attitudes toward 4MAT, (2) to know the facts and operating principles of 4MAT, and (3) to use 4MAT in planning actual lessons.

The results of the Questionnaire, Knowledge Survey, and lesson plan analysis supported all three hypotheses. On the Questionnaire, a Friedman Two-Way Analysis of Variance by Ranks yielded a .001 level of significance, indicating that the increasingly positive attitude that occurred is likely a result of continued exposure to The 4MAT System rather than a result of selection.



## 1988-89

Author: Lieberman, Marcus

Title: Report on the Fairfax County Area III 4MAT Pre-Algebra Project

School: Fairfax County Public Schools, Fairfax, VA

Date: 1988-89

Abstract: 200 pre-algebra students in an 18-week unit showed statistically significant gains from a comparison group of approximately the same number when taught with 4MAT lessons constructed by teachers who had received 4MAT training. This report is a summary of data analyses performed on measures.

## 1988-89

Author: Lisoskie, Patricia Smith

Title: Experimental Teaching of Right and Left Hemisphere Methodology Using Biology as a Content Area (Right Hemisphere)

School/Degree: Pacific Lutheran University/M.A.

Date: 1989

Abstract: The design of an experimental situation for four high school biology classes using Bernice McCarthy's 4MAT System is investigated. This system teaches to the four learning styles in both the right and left brain modes. The result of the investigation shows that students taught with The 4MAT System, when tested objectively, score an average of ten points higher than existing scores. Students subjectively rated the teaching methods better and stated that they enjoyed the subject more.



## 1989

Author: Palatto-Fontaine, Debra

Title: Effects of the 4MAT System of Instruction on the Self-Esteem and Behavior of Ninth Grade Students (4MAT System of Instruction)

School/Degree: The University of Connecticut/Ph.D.

Date: 1989

Abstract: This study evaluated the effects of The 4MAT System of Instruction on self-esteem and behavior in the classroom. This study utilized a nonequivalent control group design to examine the impact of The 4MAT System on self-esteem and behavior. The subjects were ninth grade students attending a public high school in Connecticut. Groups were taught an earth science curriculum using different methods of instruction: The 4MAT System and a traditional lecture/textbook approach.

Qualitative methodology was included in this study to examine four areas of self-esteem. Data were collected through semi-structured interviews. Differences in themes in the academic area of self-esteem were revealed between the two groups. This study has significant implications for educators in the areas of curriculum development, staff development, school effectiveness, and multicultural education.

## 1991

Author: Craig, Allan J.

Title: Principals as Intrapreneurs: An Examination of the Management of Instructional/ Curriculum Implementation in Secondary Schools

School/Degree University of Toronto/Ed.D.

Date: 1991

Abstract: This study examined the role of the secondary school in managing the implementation of the 4MAT System, an instructional / curriculum innovation designed to improve teaching methodology in the classroom. The study was based upon the assumption that knowledge of the way principals and teachers think about the role of the principal in managing change could increase our understanding of this role and make a contribution to theory and practice.

The study was conducted in three secondary schools of a large urban school board. Data were collected to determine: What strategies did the principals use in managing the implementation of the innovation. And, what was the effect of the principals' effort on teachers.

In summary, this study provides evidence that capable principals can initiate and manage meaningful curriculum/instructional change.



## 1991

Author: Appell, Claudia Jane

Title: The Effects of the 4MAT System of Instruction on Academic Achievement and Attitude in the Elementary Music Classroom

School/Degree: University of Oregon/Ed.D.

Date: 1991

Abstract: The primary purpose of this study was to evaluate the effects of the 4MAT System of Instruction on student achievement and attitudes. The subjects were fifth grade students who attended schools outlying the metropolitan area of Portland Oregon. Eight teachers were randomly placed in either the 4MAT or textbook group. Four teachers and 87 students were in the textbook and the additional four teachers and 67 students participated in the 4MAT group.

The 4MAT lessons were based on Bernice McCarthy's eight step instructional model.

The results of the pre- and post tests and the attitude survey were analyzed using a t-test with significance established at the .05 level for one-tailed comparisons. The mean difference in achievement scores between the two groups indicated the students in the 4MAT group achieved significantly greater gains than students in the textbook group. There was no significant difference between attitudes in both groups.

## 1991

Author: Vaughn, Vicki Lynn Fulton

Title: A Comparison of the 4MAT System of Instruction with Two Enrichment Units Based on Bloom's Taxonomy with Gifted Third-Graders in a Pull-Out Program

School/Degree: Purdue University/Ph.D.

Date: 1991

Abstract: A quasi-experimental design was used for the 99 third-grade students identified as gifted by their school system. Two units of instruction ("Mysteries of the Deep/Oceanography" and "Hans Christian Andersen and Fairy Tales") were taught by teachers trained in gifted education and The 4MAT System.

The 4MAT group scored higher than the controls on the final product. Teachers preferred the traditional method of instruction but noted that 4MAT helped to focus their teaching to the important concepts. Students preferred the units and activities using The 4MAT System.

Although The 4MAT System produced no effect for either achievement or retention, it did appear to influence the factor of creativity in the final student products for the Fairy Tale Unit, and students preferred the units that used this method of instruction.



1992

Author: Hinds, Kelly

Title: The Effects of 4MAT/Talents Unlimited on Students/Achievement and Attitude

School: Northern State College, Aberdeen, South Dakota

Date: August, 1992

Available From: Northern State College, Aberdeen, P O Box 629, So Dakota, 57401  
c/o Dr. Jerry Harmon

Abstract: This Masters Thesis studied the effects of 4MAT/Talents Unlimited on Students' Achievement and Attitude.

Fifty-one fifth grade students were randomly chosen and divided into two groups. One group was taught with a textbook approach, the other with 4MAT. The content was a science unit on energy, taught daily for forty-five minutes over a three week period.

The results suggest that the 4MAT/Talents Unlimited approach to teaching is an effective instructional model for students. Students taught using the 4MAT approach:

1. showed statistical significance in the area of higher level thinking skills over the control group.
2. responded more favorably toward the lessons. Students preferred higher level thinking skills over textbook knowledge and applications.





**1992**

Author: Murray, Anna M.

Title: Training Teachers to Foster Creativity Using The 4MAT Model

School/Degree: University of Massachusetts/Ed.D.

Date: 1992

Abstract: This study was undertaken to assess outcomes of a teacher training program whose goal was application of the 4MAT Learning Style Model (McCarthy, 1981) to the design of lessons which foster student creativity. Results derived from the analysis of data in this study indicate that the training program met its objectives of content mastery, attitudinal change, and application of theory, within the context of a case study involving 27 subjects undergoing 36 hours of training.

Goals of the training program included: (1) developing understanding of basic learning style and creativity concepts; (2) increasing positive attitudes regarding the significance of diversity and creativity; and (3) applying concepts taught through construction of 4MAT lesson plans.

Results indicate that (1) during the course of the training there was a significant increase in positive attitude regarding the importance of accommodating diversity and creativity in educational settings; (2) that the training program prepared the majority of participants to develop lessons which integrated creativity and learning style theory, while satisfying 4MAT criteria; (3) that performance on lesson plan design correlated more closely to attitude than to content; and (4) that gender and learning style of participants appeared to significantly affect assessment scores.

Some Conclusions: The 4MAT Model is philosophically, theoretically, and structurally suited to the development of creativity.



## 1994

Author: Sanborn, Stephen D.

Title: A Study of the Effects of Cross-Age Tutoring Versus Learning Styles Instruction in a Heterogeneous Classroom of Higher Risk Students

School/Degree: The University of Vermont

Date: 1994

Abstract: The purpose of this study was to examine the effect of different instructional strategies on the performance of higher risk secondary school students. The strategies chosen to be studied were cross-age tutoring, an instructional strategy accomplished outside of the regular classroom and 4MAT learning style instruction in a heterogeneous classroom as part of every day instruction.

A causal/comparative method of study was chosen to investigate the relationship between instructional strategies and student learning attitudes, study skills and academic achievement. 4MAT learning styles instruction had a positive impact upon ten of the fourteen variables used to measure the success of high risk students.

## 1997

Author: Cox, Charlotte; And Others

Title: Balancing Innovation and Tradition to Create Learning Opportunities for All Learners.

School/Degree: Truckee Meadows Community College (TMCC)

Date: 1997

Abstract: In an effort to improve instruction and give greater attention to teaching techniques that accommodate different learning styles, Nevada's Truckee Meadows Community College (TMCC) implemented the 4MAT System Fundamental Training for faculty.

As a result of the 4MAT training, the college has witnessed increased networking among faculty, while faculty report a newfound enthusiasm for teaching and successes with students. There are also certified 4MAT system trainers on campus, allowing the college to offer the techniques to staff and community members indefinitely.



**1997**

Author: Montgomery, Paula Monette Singleton

Title: The Effectiveness of the 4MAT Multi-Level Staff Development and Teaching Model in a Selected School District

School/Degree: University of Southern Mississippi

Date: 1997

Abstract: The study investigated the 4MAT teaching model as introduced during staff development training in a southwestern rural school district. The research addressed: (1) teachers' attitudes toward the 4MAT teaching model, as measured by a questionnaire; (2) knowledge about the system, as measured by a survey and (3) use of the 4MAT teaching model in the classroom, as measured by prescribed criteria to evaluate lesson plans. The ultimate goal of this study is to provide data concerning the feasibility and effectiveness of the 4MAT multilevel staff development to the 4MAT Corporation and the administration of the selected school district.

The subjects of this study were 1997 educators in a selected southwestern Louisiana school district. Nine-hundred and fifty-four Questionnaire and Knowledge Surveys were provided to be administered to the teachers of the entire district. A total of 569 were returned.

Teachers were also asked to volunteer a 4MAT lesson plan for evaluation by an independent rated. The lesson plans were assessed using a prescribed criteria that is based on the teaching strategies presented during the 4MAT staff development.

There was a significant relationship between teachers' attitudes toward a multilevel staff development program, their knowledge of program components, their level of use, their grade level taught and their teaching experience.



1999

Author: Palmer, Jaellayna

Title: New Model, New Media: Applying 4MAT to Web-Based Training

School/Degree: Unpublished Master's Thesis, University of Surrey

Date: 1999

Abstract: This thesis suggests a practical model for fulfilling all learning style preferences identified in the 4MAT system through a Web-based course. The 4MAT model has been linked with quality educational outcomes for face-to-face courses. Considering 4MAT's success in the classroom, the question explored is whether 4MAT, as a learning style model, can be applied successfully to a course delivered through technology.

Specifically, a course for the Ontario Agricultural Training Institute (OATI) was designed according to the constraints of the learning styles model 4MAT and delivered through the World Wide Web. This included simulating face-to-face processes through a computer interface.

The data submitted are both qualitative and quantitative. The key quantitative data are the results of a survey administered to 4MAT practitioners including a key question: In your opinion, has this course been 4MATed?, with all answering in the affirmative. Extending theory into practice, course-planning templates were developed; and, along with sample screen shots from the actual course, are included.

This work demonstrates that a learner-centric model, such as 4MAT can be applied to a Web-based course.



## 1999 - 2000

Author: Portage Community Schools, Portage, WI

Title: Comprehensive School Reform Graduating School End-of-Year Report Rusch Elementary School, 1999-2002

School/Degree: Portage Community Schools, Portage, WI

Date: 1999 - 2000

Abstract: Rusch Elementary School piloted 4MAT as a framework for school reform in 1998-99, the year prior to becoming a CSR grant recipient. Rusch is a K-6 elementary school in rural Wisconsin with 18 full-time teachers and 268 students. The model provided a systematic approach to changing instruction, assessment, curriculum, and building community and communication. 4MAT provided a common vocabulary and perspective and allowed a sharing of student and teacher needs, data based decision-making, and collaborative problem solving for both faculty and families.

Through concentrated professional development, a collaborative structure for curriculum and assessment reform, and a commitment to reflective practice which used both data and professional expertise and knowledge about their own students, the faculty and staff raised test scores every year, lowered discipline referrals, and improved parent involvement. Along with 4MAT as a conceptual framework for these changes, the 4MAT model drove actual classroom instructional changes. Focused and consistent math (Everyday Math) and literacy (Guided Reading) projects were part of the changes. Emphasis on the significance of family as partners in a child's education led to better communication and interactions between school and community. Looping, new report cards, and a stronger standards-based curriculum were established.

By Year 3, student academic achievement included:

1. Raising all students out of minimal performance to basic or beyond in WKCE reading test scores
2. Increasing the numbers in the proficient/advanced range of WKCE  
2002 scores: Reading 77% to 84%; Language 53% to 72%; Math 41% to 60%; Science 70% - 75%; and Social Studies 70% to 81%.



2000

Author: Hancock, Carol Wilcox

Title: Impact of the 4MAT Lesson Planning System on the Number of Times a Teacher was Off-task in a Fifth, Sixth and Seventh Grade Classroom

School/Degree: Baylor University, Ed.D..

Date: 2000

Abstract The primary purpose of this study was to evaluate the effects of the 4MAT Lesson Planning system on the number of times a teacher was off-task in a fifth, sixth or seventh grade classroom. Research demonstrates that student off-task disruptive behavior was reduced when students are actively engaged in lessons.

This study demonstrated a reduction in the number of off-task behaviors in the classrooms where the teachers were using the 4MAT System Lesson Planning System. Implications exist for the use of organize, structured lesson plans focused on student engagement.



# 2008

## 2008 REPORT on EFFECTS OF 4MAT TRAINING in YONKERS PUBLIC SCHOOLS

Table 6: Comparison of Test Scores for Students with Less Than Five and At Least Five 4MAT Trained Teachers 05-06

### High School Students

STANDARDIZED TEST	# OF 4MAT TRAINED TEACHERS	# OF STUDENTS	MEAN	STANDARD DEVIATION	SIGNIFICANCE
NYSE Combined Grades English Language Arts Scores	Less than 5	239	628.18	35.057	Sig. AT .01 Level
	At least 5	410	637.66	40.495	
NYSE Grade 6 ELA Scaled Scores	Less than 5	65	626.89	30.549	Sig. AT .01 Level
	At least 5	145	644.95	37.497	
NYSE Grade 7 ELA Scaled Scores	Less than 5	148	635.84	31.648	Not Significant
	At least 5	117	618.12	41.091	
NYSE Grade 8 ELA Scaled Scores	Less than 5	26	587.85	37.123	Sig. AT .01 Level
	At least 5	148	645.97	37.775	
NYSE Combined Grade Math Scaled Score	Less than 5	251	619.56	40.676	Sig. AT .01 Level
	At least 5	430	631.56	37.572	
NYSE Grade 6 Math Scaled Scores	Less than 5	67	610.39	39.743	Sig. AT .01 Level
	At least 5	148	639.62	38.462	
NYSE Grade 7 Math Scaled Scores	Less than 5	157	629.08	36.506	Not Significant
	At least 5	122	616.47	38.273	
NYSE Grade 8 Math Scaled Scores	Less than 5	27	586.93	45.086	Sig. AT .01 Level
	At least 5	160	635.61	32.781	
Science Scores Grade 6	Less than 5	27	50.11	11.963	Sig. AT .01 Level
	At least 5	160	67.63	14.050	
Social Studies Scores Grade 6	Less than 5	26	44.5	8.932	Sig. AT .01 Level
	At least 5	162	60.93	12.448	

Eight of the ten comparisons were significant in the predicted direction. Students who had more 4MAT trained teachers had higher standardized scores than those students who had fewer 4MAT trained teachers.



**2009**

Author: Enver Tatar and Ramazasn Dikiei

Title: The effect of the 4MAT method (learning styles and brain hemispheres) of instruction on achievement in mathematics

School/Degree: Erie EJ863634

Date: 2009

Abstract: The purpose of this study was to determine the efficiency of 4MAT method of instruction in which learning style and cerebral hemispheres are taken into account in teaching the binary operation and its properties in mathematics.

The sample of this study comprised 58 ninth grade students in two separate classes in a high school. One of the classes was selected as the experimental group in which 4MAT method of instruction was used; and the other class was selected as the control group in which the traditional teaching was given, and this selection was performed randomly.

The data have been obtained primarily from three scales, namely 'mathematical knowledge test', 'mathematical attitude scale' and 'knowledge test on binary operation and its properties'. It has been determined that 4MAT method of instruction was more efficient than the traditional method in teaching of the binary operation subject in mathematics.





## 2012

Author: Felliz Tuba Dikkartin Ovez

Title: The Effect of the 4MAT Model on Student Algebra Achievements and Level of Reaching Attainments

School/Degree: Balıkesir University, Education  
Elementary Mathematics Education Department, Turkey

Date: 2012

**Abstract:** The purpose of this study is to analyze the effect of the 4MAT teaching model on 8th grade mathematics lesson curriculum algebra learning domain achievement levels and level of reaching attainments. In the study, an experimental design with a pre test-post test control group was utilized. The study was conducted with 105 8th grade students enrolled at the one Primary School in the central district of Balıkesir during the 2011-2012 academic year.

Teaching was provided to the experimental group based on the 4MAT teaching model and to the control group in compliance with applications and activities in the text book within the framework of attainments in the algebra learning domain. As a result of the conducted data analysis it was determined that the difference in achievement score averages between the experimental group and control group were significantly in favor of the experimental group and the level of reaching attainments in the experimental group, which was applied the 4MAT teaching model, were higher compared to the control group.



**2012**

Author: Uyangor, Sevine Mert

Title: The Effectiveness of the 4MAT Teaching Model Upon Student Achievement and Attitude Levels

School/Degree: Balikesir University, Balikesir, Turkey

Date: 2012

Abstract: 4MAT is an 8-step, sequential instructional model based on two theoretical constructs: Kolb's model of learning styles and the concept of brain hemisphericity.

The model, developed by B. McCarthy (1987) is derived by interacting each of Kolb's four quadrants with both left and right brain. The purpose of this study is to examine the influence of the 4MAT teaching model which depends on learning styles that have been generated by the help of the relationship between the brain and learning; and focuses on the learning loop as a center upon students' level of mathematics course achievement; and the level of attitudes towards mathematics in the unit of the Hoop and Circle.

An experimental pattern model with a pre-test, post-test control group has been used in this research. The sample of this study comprised 81 students from the 7th grade at Public School in Balikesir during the 2009-2010 education periods. It has been determined that 4MAT method of instruction was more efficient than the traditional method.



# 2014

Author: İdris Aktas & İbrahim Bılgın

Title: The effect of the 4MAT learning model on the achievement and motivation of 7th grade students on the subject of particulate nature of matter and an examination of student opinions on the model

School/Degree: Turkey, Balıkesir University

Date: 2014

Abstract: The purpose of this study is to examine (1) the effects of the 4MAT learning model on the 7th grade students' academic achievement and motivation on the 'Particulate Nature of Matter' unit and (2) identify student opinions on the 4MAT model.

N = 235 students (115 experimental, 120 control) in Turkey.

DESIGN AND METHODS: Experimental groups were instructed with the 4MAT model while control groups were instructed with a traditional method. Motivation Scale (MotScl) were administered to students. The opinions of students in the experimental groups on the 4MAT model were ascertained through open-ended questions after the application.

RESULTS: According to independent t-test results, statistical difference in favour of the experimental groups was detected between the post-AchToM ( $ES = 1.43$ ;  $p < .0001$ ) and post-MotScl ( $ES = 0.32$ ;  $p < .05$ ) scores. According to data obtained from the questionnaire, the application of the 4MAT model increases student motivation and participation in the lesson, lessons are more amusing and enjoyable, and the self-confidence of the students increases. Besides these positive opinions, however, a few students stated that the method took too much time, they were not motivated and it did not help them in understanding the subject.

CONCLUSIONS: The 4MAT model is more effective than traditional method in terms of increasing achievement and motivation. The model takes all learners into account. Thus, the teacher or educator should use the 4MAT model to ensure all students' learning in their classroom.



## 2016

Author: Burcu Sezginsoy-Şeker 1 Filiz Tuba Dikkartın-Övez 1

Title: The Integration of the 4MAT Teaching Model with the Interdisciplinary Structure: A New Model Proposal and Test

School/Degree: Eurasia Journal

Date: 2016

Abstract: In this study, the “4MAT (4 Mode Application Techniques) Teaching Model” and “Interdisciplinary Concept Model”, the applications of which aimed to gather different disciplines around the selected concepts, were integrated within the scope of the disciplines of mathematics and social studies.

For this study, these two models were combined to develop and test what was designated the 4MAT (Interdisciplinary 4MAT) model. The study was planned with a pre-test/post-test, control group, experimental design. The study involved 65 students (primary school, 2016).

This study found that the attainment level of students and their mean scores significantly favored the experimental group. It also found that education with the 4MAT model effectively and fully attained the learning aims and achievement and that the scores differed in the control group according to their learning styles.

EURASIA J. Math., Sci Tech. Ed 2018;14(5):1767–1790



2017

Author: PHONGNIMIT PHONGPHINYO

Title: The effects of 4MAT Learning Model Supplemented with Concept Map on Achievement and Attitudes towards Learning of Student Teachers on Sufficiency Economy Philosophy

School/Degree: Faculty of Education, UdonThani Rajabhat University, Thailand

Date: 2017

Abstract: The objectives of this research were to study and compare the sufficiency economy philosophy achievement and attitude towards learning of student teachers before and after using 4MAT learning model supplemented with concept map.

The sample used in this research were 1st year student teachers utilizing 24 students who were studying in the second semester, the academic year 2015 in UdonThaniRajabhat University, Thailand which selected by cluster random sampling. The research instruments were the 4MAT learning model supplemented with concept map of sufficiency economy philosophy lesson plan, the achievement test and the attitude towards learning questionnaires. The research was carried out by the one group pretest-posttest design. The data were analyzed using mean, standard deviation, percentage and t-test for dependent. The results of this study were follows:

Keywords - 4MAT Learning, Concept Map, Sufficiency Economy Philosophy

...The objectives of this study was to determine the efficiency of the 4MAT learning model supplemented with concept map on achievement and attitudes towards learning of student teachers on sufficiency economy philosophy

### **OBJECTIVES OF THE STUDY:**

1. To develop learning activities of sufficiency economy philosophy into the 4MAT learning model supplemented with concept map for student teachers.
2. To study student teachers' achievement and attitude towards learning who study through the 4MAT learning model supplemented with concept map on sufficiency economy philosophy

### **CONCLUSION AND DISCUSSION:**

Based on the findings obtained in the study, it can be concluded the following points:

1. The student teachers who have been instruction with the 4MAT learning model supplemented with concept map have sufficiency economy philosophy achievement pretest mean score 39.33 (65.56%) after learning their post-test mean score is 50.29

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(83.82%).The results show that the post-test mean score was higher than 80% and it was also higher than the pretest.

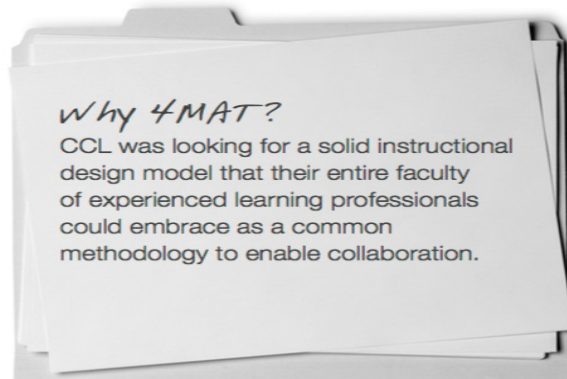


2. The student teachers who have been instruction with the 4MAT learning model supplemented with concept map have opinion attitude towards learning mean score is 4.11 (82.22%). The result show that attitude towards learning of the 4MAT learning model supplemented with concept map were at the “good” level.

Lastly the students presented of their own knowledge to class. The results of this research confirmed the effectiveness of employing the 4MAT learning model supplemented with concept map to teach development sufficiency economy philosophy achievement and making student teachers happy with learning that supported the students’ attitude towards learning. A specific education for the instructors may be provided to perform a teaching in which both the learning styles on the two sides of the brain and concept map are taken into account. Proficiency teaching and training must be delivered to them where these concepts will be taught.

## SOME REFERENCES:

The Center for Creative Leadership: Using 4MAT® to Position “Design as a Strategic Advantage”



The Center for Creative Leadership (CCL) is a top-ranked, global provider of leadership education. The CCL faculty of over 550 offers leadership programs in the Americas, Europe, and Asia.

In 2007, CCL adopted the 4MAT model as their global platform for instructional design and delivery. With a vision of establishing their needs analysis and instructional design approach as a competitive advantage, CCL implemented a four-step approach to bring 4MAT into their culture:

The Center for Creative Leadership: Using 4MAT® to Position “Design as a Strategic Advantage”

“With 4MAT, we could have substantive conversations about the [instructional design and delivery] work we shared.”

“As we trained our design and delivery faculty in 4MAT, one of the more senior faculty members shared with the whole class that this was the best internal training he had experienced in CCL and that what made it the best was that it provided us with a common language for talking about the designs we create. With 4MAT, we could have substantive conversations about the work we shared.”

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## SOME ADDITIONAL STUDIES

1. Beane, J. A. (2016). Curriculum integration: Designing the core of democratic education. New York, USA: Teachers College Press.
2. Bıkmaz, F. (2001). Öğrenme biçimlerini (style) okula getirmede 4MAT sistemini kullanma. Journal of Faculty of Educational Sciences (JFES), 34(1-2), 105-115. Ankara, Turkey
3. Bulbul, H., Ozsoy (2015) Student views on the 4MAT Teaching Model. Applications in the Live Dimensional Art Studio classes in the Fine Arts High School. Anadoly Journal of Educational Sciences International, Art Ed Special Issue, Nov. 2018... Ankara



4. Effect of using 4mat method on academic achievement and attitudes toward engineering economy for undergraduate students, Qassim University, Kingdom of Saudi Arabia. Bani Suef University, Egypt. December, 2015 by Osama Mohamed Irfan\* Fahad A. Almufad Ayman Mohamed Brisha,
5. McManus, D. A. (2001). The Two Paradigms of Education and the Peer Review of Teaching. Journal of Geoscience Education, 49, 423-434.
6. Nicoll-Senft, J. M., & Seider, S. N. (2009). Assessing the impact of the 4MAT teaching model across multiple disciplines in higher education. College Teaching, 58(1), 19-27
7. Nowacki, A. S. (2011). Using the 4MAT framework to design a problem-based learning biostatistics course. Journal of Statistics Education, 19(3), 1-24.
8. Thomas, A. M. (2015). Effectiveness of 4MAT system of instructional design on learning styles, hemispheric preferences and achievement in physics of students at secondary level. Doctoral dissertation. Kerala: School of Pedagogical Sciences Mahatma Gandhi University Kottayam.  
<http://www.mgutheses.in/page/?q=T%202644&search=&page=&rad=>
9. Using the 4MAT Model to Promote Learning Achievement and Connection Skills on Chemical Reaction of the 10th Grade Students Ramida Chittiwattanakorn<sup>1</sup> Faculty of Education, Rangsit University, Thailand Boonyaras Sookkheo <sup>2</sup> Faculty of Science, Rangsit University, T ISSN 2408-1809 Rangsit Journal of Educational Studies, Vol.4, No.2, pp.25-31, July-December

#### Key Books for Understanding the Basis of 4MAT Design

Kolb, D. A. (1984). ***Experiential Learning: Experience as the Source of Learning and Development***. NJ: Prentice Hall.

56 Pinker, Daniel. (2006). ***A Whole New Mind***. Riverhead Books.

Kahneman, Daniel. (2011). ***Thinking Fast and Slow***. Farrar, Straus and Giroux

#### The McCarthy Books

McCarthy, B. (2000). ***About Learning***, Chicago, USA: About Teaching,

McCarthy, B. (2000). ***About Teaching: 4MAT in the classroom***. Wauconda, IL: About Teaching, Inc.

McCarthy, B. (2005). ***Teaching Around the 4MAT® Cycle: Designing Instruction for Diverse Learners with ...*** Paperback: 120 pages; Publisher: Corwin; 1 edition (November 28, 2005), Amazon.com

McCarthy, B. (2012). ***The Learning Cycle, the 21st Century and Millennial Learners***. About Learning, Wauconda, IL