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# On the Road to EXCELLENCE

## An EFL-Teacher´s Handbook

### Leaders who have made an Impact on Education

Inglés

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Your comments and suggestions are very important in providing all teachers with the best quality in educational guidance. Please send all comments and suggestions to:

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First Edition 2014
Saltillo, Coahuila, México.

## Dear Teachers,

The state of Coahuila seeks to offer quality education to its students, as top priority. For this reason, the State English Direction, committed to support this measure in the area of Second Language Acquisition, offers teachers of English resources to aid them with the day to day task of the teaching-learning process. In response to this important challenge, various Manuals have been prepared for the teachers of English in the State as part of the series of Manuals entitled "On the Road to Excellence". This series of Manuals, which as the name states, seek to develop excellence in the teaching practices of all our teachers.

This particular Manual entitled, "Leaders Who Have Made An Impact on Education", focuses on multi-lingual education, presenting various teaching models in use, the theories behind them, and their effectiveness in the promotion of fluent second language use.

Furthermore, this Manual is arranged in chronological order highlighting the most important Leaders in Education, as well as their Psychological Theories. Another important part of this Manual includes Designs and Models in Use. Some of the theories presented here are updated versions of previous ones; some others are unique; still others have results that are worth mentioning.

The principal objective is for you to become acquainted with the leaders and their theories in order to increase your repertoire of resources to draw upon for reaching students' needs. The more you know about learning, the better you can teach.

Also included is a special section containing Supplemental Readings. In this section you can read more on the CLIL Philosophy and its impact on education. Likewise, you can find out more about Stephen Krashen's Theory of Second Language Acquisition, and also about Lev Vygotsky's Social Development Theory.

Due to the high level of commitment of the teachers of the State, we are certain that you will read and analyze this Manual in order to take and apply the ideas here presented, and use them to improve your teaching practices, resulting in even greater and better prepared teachers of the English language.

## State English Direction

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# PART I

INTRODUCTION

Hello, English Teachers:
Welcome to our comprehensive text summarizing the general development of education over the past 2500 years. We have chosen to emphasize a focus on multi-lingual education, presenting various teaching models in use, the theories behind them, and their effectiveness and efficiency in the promotion of fluent second/third language use.

Some of the theories we'll present are simply updated versions of previous ones. Some are unique. Some have better results than others. The key for you is to be aware of them and see how they have led us to where we are in multi-lingual education today. The more awareness you have of theories and models in use, the wider will be your repertoire of resources to draw upon for reaching students' needs.

The more you know about learning, the better you can teach. We can't talk about reforms in education if there are no changes in your classroom. Read, grow, and do your personal best, as always!

# PART II

## Chronological Arrangement of Leaders (499 B.C. - 2014 A.D.)

Before beginning, let's make sure you understand the English terminology used to express dates, as expressed in most history books.

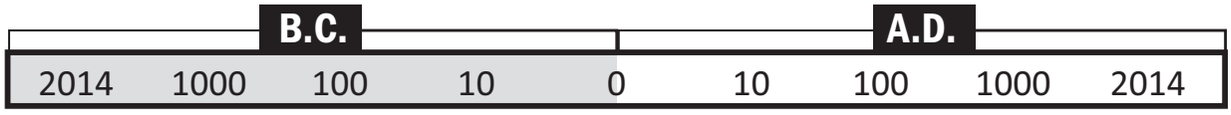
### A. Understanding Centuries

What in the world is "A.D."?

The Gregorian Calendar, developed over 1,000 years ago by Pope Gregory, uses B.C. (Before Christ) and A.D. (Ano Domini: Latin for "Year of the Lord"). A.D. dates reflect years after Jesus Christ was born.

***There is no year 0***

| | |
|---|---|
| 1 - 99 | 1st Century A.D. |
| 100 – 199 | 2nd Century |
| 900 – 999 | 8th Century |
| 1600 – 1699 | 17th Century |
| 2000 – 2099 | 21st Century |




### B. Pre-Assessment. What Do You Know Already?

***Your assignment:***

1. Write 5 names of educational leaders, from a list provided to you, about whom can you discuss with others, explaining his/her role and importance.
2. Write names of anyone from this list that you can speak about for 1 minute. If you don't know anyone on this preliminary list, don't worry. If you knew everything, how could you grow? The names are not in any specific format, nor is the list based on importance of the educator named.
3. Look at this pre-assessment as a way to realize your growth opportunity, and to be able to begin on the road to world-class excellence!

## C. Think or discuss about your performance on this task

Take your time, read this book little by little, discuss topics with friends and colleagues. You'll grow in knowledge and raise your level of professional competency.

**LEADERS:**

- Confucius
- Saint Augustine
- Alfred Binet
- Herbert Spencer
- Tony Buzan
- John Dewey
- Emile Jacques-Dalcroze
- Jean Piaget
- Carl Rogers
- Theodore Sizer
- Lev Vygotsky
- Robert Marzano
- Paulo Freire
- Madeline Hunter
- Abraham Maslow
- Benjamin Bloom
- Stephen Krashen
- Howard Gardner
- Daniel Goleman
- Mike Schmoker
- Jim Cummins
- Jerome Burner
- Steve Jobs
- Maria Montessori
- Socrates

**GUIDED QUESTIONS TO SUPPORT THE USE OF THIS BOOK.**

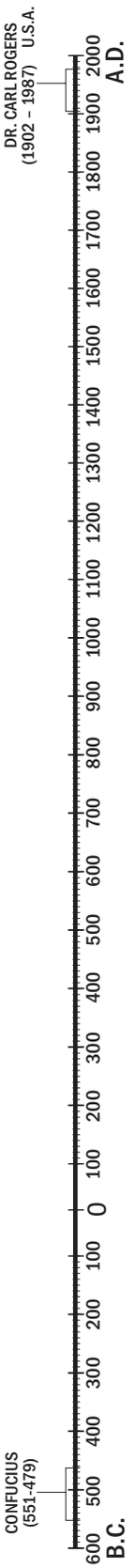
- Who were/are educational leaders?
- What educational views did/do they support?
- Can we apply their teachings to 21st Century?
- How? Why?
- How can knowing about educational leaders be useful?
- Early ideas – recent ideas: differences/similarities?
- Can you see connections?
- What's your philosophy of education?
- Write it in 1 sentence, and place it at the top of your notes, easy to re-check periodically, so that as you read and grow in knowledge, you'll need to decide:
- Did my philosophy change as I learned more?

or

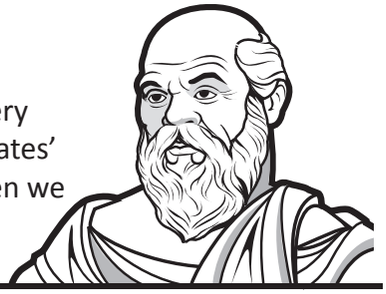
- Was my initial philosophy supported by my readings?

Now, we'll begin with LEADERS in a CHRONOLOGICAL FORMAT.
As you read the historical sequence, use your critical thinking powers to begin seeing the relationships among the leaders, and notice how some impacted the thinking and philosophies of others.

***(Use this timeline to organize the chronological sequences; it may be easier for you to follow along with the book's notes).***



**SOCRATES** c. 469-399 B.C. : Athens, Greece
Founder of Western, liberal philosophy
Socratic method of questioning / pedagogy leads to insight, discovery and ethics. Plato's writings about Socrates are our evidence of Socrates' works. "Know thyself" was Socrates' main philosophy, because when we know ourselves well, we can support and guide others better.



**CONFUCIUS** circa 551 - 479 B.C.: A Chinese philosopher
Confucius is known for his wise phrases and theories about law, life, education, and government. His main career was as a teacher.
He also was the Minister of Crime for the government, making fair, honest, positive reforms, reducing corruption greatly.
He made major reforms: the importance of the family, model of government, respect and honor your ancestors, still with us today in much of Chinese culture.

***Some of Confucius teachings:***

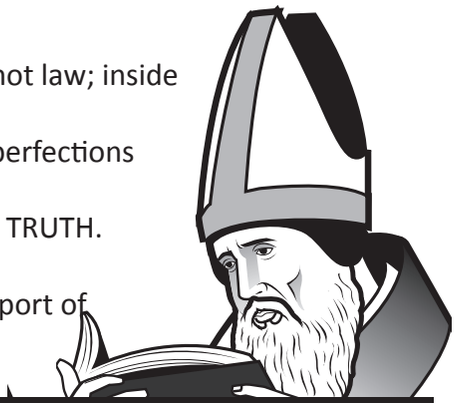
It is not possible for one to teach others who cannot teach his own family.
If you enjoy what you do, you'll never work another day of your life.
The superior man is modest in his speech but exceeds in his actions.
He who merely knows right principles is not equal to him who loves them.
Examinations do not prove what we know. Only life proves what we know.

**SAINT AUGUSTINE** 354 A.D. – 430 A.D.: Algeria in North Africa.
He was famous in his time as a gifted preacher and controversial writer.
He saw apathy in schools, so began to implement ideas to raise interaction and involvement. Augustine pushed for reforms in education, to raise thinking levels, not solely teaching based on memorization.

***Sayings/teachings of St. Augustine***

Christianity is not external and visible. It is a matter of spirit not law; inside not outside.
The Church has room for sinners as well as saints, for the imperfections we all have.
He supported research, which he saw as the only path to the TRUTH.
He wrote Christian apologetics of Church history.

(Apologetics = Defending a position through the systematic support of investigation and research)



**HERBERT SPENCER** 1820 –1903: England, Father of Social Darwinism

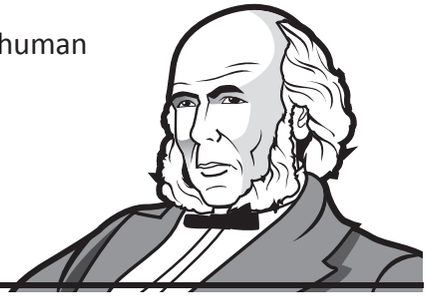
Spencer invented the phrase, "Survival of the fittest". (The phrase wasn't invented by Charles Darwin, as many may have thought.)

Spencer came from a family of teachers.

In 1855 he published the text: Principles of Psychology, still in use today in some universities, as it was ahead of its time in some topics.

He was so successful as an author that Spencer was able to live off money from his writings

Spencer believed that evolution applied to everything, even the human brain evolves.



**ALFRED BINET** (French pronunciation: "BIN-AY".) 1857 – 1911: France

Lawyer, teacher, psychologist

Created the 1st intelligence test (I.Q. = Intelligent Quotient) because he wanted to identify special needs of students.

**What is I.Q.?**

$$\frac{MA}{CA} = IQ$$

**MA:** Mental Age: Derived from an exam Binet invented,
**CA:** Chronological Age x 100

Supposedly, when the MA is the same as the CA, x 100, it results in the average normal intelligence score equal to 100.

Binet wanted to identify students that needed special help.

He encouraged games, such as chess, to better develop the cognitive facilities.

His research influenced the ideas of Dr. Jean Piaget.

(French pronunciation: "PIA-JAY".)

**JOHN DEWEY** 1859 -1952: United States of America

He's known as "The Father of American Education".

He taught high school and primary...but he felt "insulted" as a teacher by the lack of respect from administrators and the general public.

Johns Hopkins University: Dewey taught and studied philosophy.

He is known for his liberal ideas and support of progressive education.

DEWEY: "Sentences and words do not imply intent".

He supported "Project-based learning" so that students would work in teams, resulting in commonly-researched projects.

His philosophical theory: PRAGMATISM = the validity of an idea should be evaluated in terms of its practical use and consequences. In other words, "If it works, use it."

At the University of Chicago, Dewey established a separate, new department: pedagogy. (Greek word meaning: to lead the child)

He worked at Columbia University between 1904 –1939, preparing teachers to teach well, NOT simply to "stand in front of the class giving out bits of information."

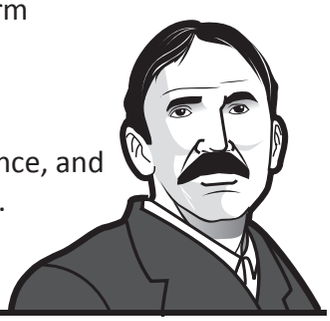
He introduced grade level divisions, 1st - 12th, high school credits, and graduation requirements, so as to have some national standardization levels.

***Accomplishments and teachings of John Dewey:***

"The teacher is not in the school to impose certain ideas, or to form certain habits in the child, but is there as a member of the community, to select the influences which shall affect the child, and to assist him in properly responding to these influences."

He worked with Albert Einstein for teacher autonomy, independence, and the formation of the International League for Academic Freedom.

The Dewey Commission met in Mexico (1937) clearing Leon Trotsky of charges made by Joseph Stalin.



**EMILE JACQUES DALCROZE** 1865 – 1950: Swiss

He was a leading music educator, strongly promoting that music enter the schools as an academic subject.

He said, ***"Musical education is when the body plays a role between sound and thought."***

He saw a connection between the brain and music, and noted the brain's ability to learn better with classical music. He researched and proved that music supports mathematics studies, accuracy, and math comprehension. Now, more than 70 years later, using sophisticated medical instruments, neurologists and psychologists are recognizing that music plays an important role in brain development and in second/third language development.

**MARIA MONTESSORI** 1870 – 1952: Italy

She was the first female medical doctor in Italy.
She worked with "mentally disabled children" at a public Italian hospital.
She established a model school for disabled children, using materials and games and table and chair styles which she invented.
The children in her care performed so well, they were able to enter "mainstream" schools within a relatively short time, in one or two years.
She was positively influenced by the ideas Dr. Jean Piaget, relating to the developmental studies and cognitive growth theories, as to which ages children best learn specific types of skills.

***Montessori´s Ideas***

Children learn naturally with proper materials.
Self-education, self-realization, and self- discipline began to emerge.
The quality of work is what's important, not the quantity.

***She identified, by observations, 4 periods of growth of very young children:***

0- 6 months
6-12 months
12-18 months
18-24 months

Maria Montessori noted that at each age, there are very different needs to be met, so we can best help the child develop his/her potential.
She taught that we should never underestimate what children can accomplish. They can do and know much more than we may presume.
"Never do for a child what he/she can do for him/her-self."
John Dewey criticized her rigidity, as being too structured; however, his experience was not with pre-school children, nor did he work wih children with learning problems.
Over the past 100 years, we have learned that in many situations, a structured classroom environment supports young children's special needs.

**JEAN PIAGET** 1896 – 1980: Swiss scientist

Piaget observed children at certain ages, and observed that younger children consistently got the same items wrong that older children could do easily, quickly, and correctly.

Piaget developed his four stages of cognitive, intellectual growth, from birth to age 12, and on to 12+ through adolescence.

PIAGET: "Education means making creators, not conformists."

Piaget influenced Lev Vygotsky, who saw cultural/social influences as more important than biological ones as supported by Piaget. In many things, however, they were in agreement.

Interestingly, teachers, is that Piaget's Four Stages of Development, were established by Piaget solely based on his observations of children.

Now, 40 years into cognitive development research, with sophisticated medical instruments measuring brain waves, neural stimulation, physical evidence in the 21st century of the formation of synapses, neurologists and biologists are confirming that the observations of Dr. Jean Piaget, and Dr. Maria Montessori, noting the stages at which children can master skills, are directly connected to the physical development of the children's brains.

In other words, the physical development of the child, at specific ages, must be supported if the cognitive growth is to occur.

This is extremely important because we can see that Piaget's and Montessori's years of observing young children, without the sophisticated medical tools of the 21st Century, made major contributions to education, paving the way for current research, teaching us more and more about how children learn, and how we can improve our teaching techniques.

Let's look at the four stages of child growth, as developed by Piaget.

**Piaget´s biological model of intellectual development has four stages:**

***Stage 1: "Sensori-motor"***

Birth - 2 years:

At this stage, the child learns mainly from touching (being touched), hugged, smelling, listening, eating, feeling things, stimulated by as much as possible from the environment.

***Stage 2: "Pre-operational"***

2 years – 7 years:

At this stage, the child begins the acquisition of motor skills, such as sitting up, crawling, walking, controlling the urinary tract and sphincter muscles, eating, drinking from a cup or glass. This stage leads to a sense of independence within the child, because once he or she is able to move about independently, the world becomes wide open for him/her.

It is especially important during the years in the "pre-operational" stage, that the child is actively developing gross motor skills, such as jumping, running, rolling or tossing large balls, making large bodily movements, climbing, swimming, playing with large trucks or child-size doll houses, keeping rhythm to music and percussion instruments, physical education activities and singing as they run and move.

During this stage, children should NOT be concentrating on learning to read, write, or complete fine, motor skill activities. Why?
Because if gross motor activities at this stage are not fully developed, prior to the fine motor skills to be developed in Stage 3, the child's physiological development is compromised, resulting in approximately 15% of children exhibiting symptoms of dyslexia or lack of ability to concentrate well.
Both Piaget and Montessori observed this phenomena, which now has been proven with 21st century neurological studies using sophisticated medical tools.

***Stage 3 "Concrete operational"***
7 years - 12 years
At this stage, children are beginning to think logically, seeing reasons, similarities, and differences among items, objects, and their decisions. The academic and social success at this stage depends greatly on whether or not the previous stage had been passed through effectively, meaning no one forced the 2 - 7 year-old child to complete fine motor skill work, nor was the child sitting for long periods of time, completing tasks at a school desk or table.

***Stage 4: "Formal operational"***
12+ years of age, and beyond, through adolescence
At this fourth stage of Piaget's child development theory, the child begins to exhibit abstract reasoning, can think logically, identifies cause and effect, and is able to show effective critical thinking skills, especially if his/her teachers and adults stimulate and provide opportunities for the child to use high level thinking skills.

**LEV VYGOTSKY** 1896 - 1934: Russian

He died young of tuberculosis in Moscow, at age of 37 years.

Thirty years after his death, his published research and work were re-discovered by educational researchers, and, in 1962, they were first published in the West.

Vygoysky researched memory, decision-making, and selective attention.

He had been influenced by Dr. Alfred Adler's work in Adler's area of psychology, closure, and how humans remember.

Vygotsky theorized that human language starts as a tool for social interaction. He called this his "Social Development Theory".

The SOCIAL DEVELOPMENT THEORY is the basis of CONSTRUCTIVISM, which is one of the major theories supported in Mexico's National English Program in Basic Education (NEPBE).

Vygotsky's Theory has 3 major themes: SI, MKO and ZPD.

***Vygotsky´s 3 major themes***

***1. SI: Social Interactions***

Social Interactions must precede cognitive development and learning. According to Vygotsky, children need to interact with others before the interest in learning and cognitive development can be stimulated.

***2. MKO: Most Knowledgeable Other***

The MKO is anyone near the learner with more ability / knowledge than the learner. It could be a teacher, another child, or a family member. Interaction with this MKO is what stimulates the child to learn and to develop language.

***3. ZPD: Zone of Proximal Development***

This is the area of performance between working with guidance and performing alone. The ZPD is where growth occurs.

At the point when the learner can accomplish a task alone, he/she is said to have "learned". After having been supported and guided by the other, the learner has "learned". The person providing support for the learner could be a teacher, a friend, family member, or another child.

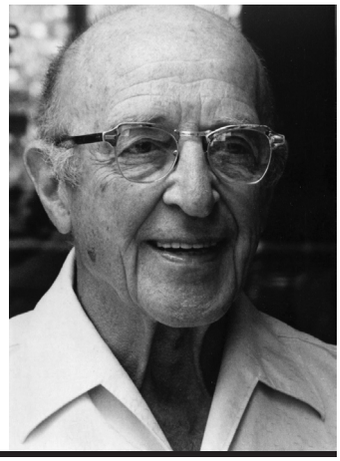
NOTE:

Because there's so much information on LEV VYGOTSKY'S research and its impact and influence on language development, please check SECTION VII, "SUPPLEMENTAL READINGS" section to learn more information about Vygotsky, , and several other names or topics presented in this book.

**CARL ROGERS** 1902 – 1987: United States of America

Carl Rogers had been exposed at length to the ideas of John Dewey, Abraham Maslow, Alfred Adler, all of whom had influenced him positively, so he became a "humanistic" educator.

Rogers is known for his "non - directive" therapy and his humanistic educational views. He supported the idea of "Guide, don't dictate".



Rogers supported that educators, psychiatrists, psychologists, and parents should ask open-ended questions to provoke thought.

He wrote and taught that humans have the ability to repair their own mental health, if they can be guided to form insights to their actions. Teachers and psychological professionals, need to ask open-ended questions, and allow the patient to think, recognize patterns, and discover for him/herself the pattern of non-functioning.

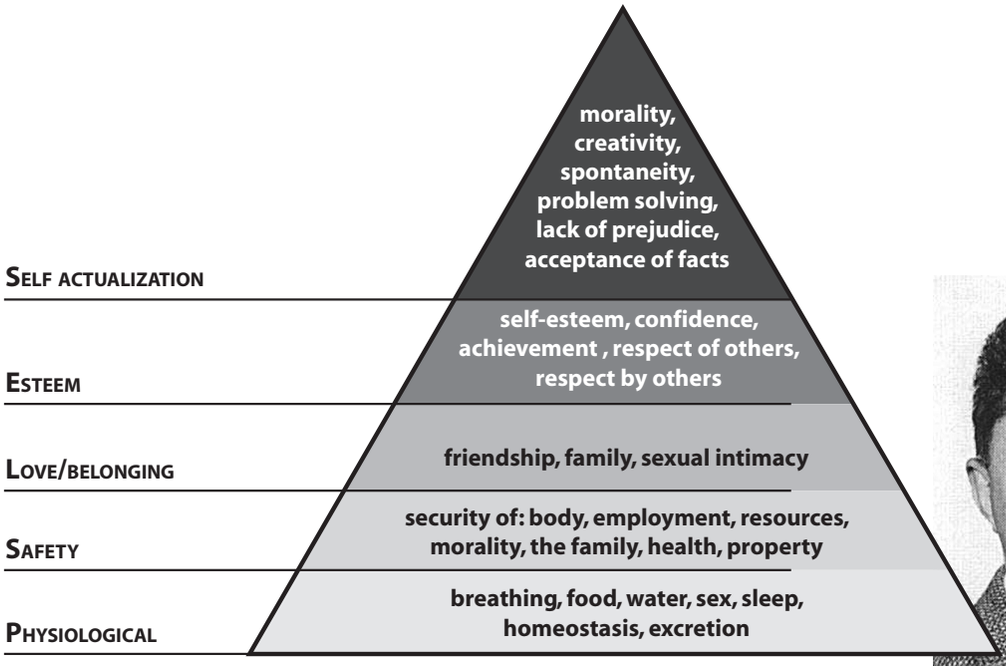
Once the insight and understanding of why we do self-destructive things are uncovered, we can begin to make positive changes which will lead us to better mental health, and a more satisfying life.

**ABRAHAM MASLOW** 1908 -1970: United States of America

Dr. Maslow´s work dealt with motivational studies. He´s most famous for developing a hierarchy of human needs. Deficiency needs (physiological and safety) must be met first in order. Then, growth needs can develop.

***Human goal:*** Self-actualization / Reaching one's potential

***Maslow's Hierarchy of Needs***



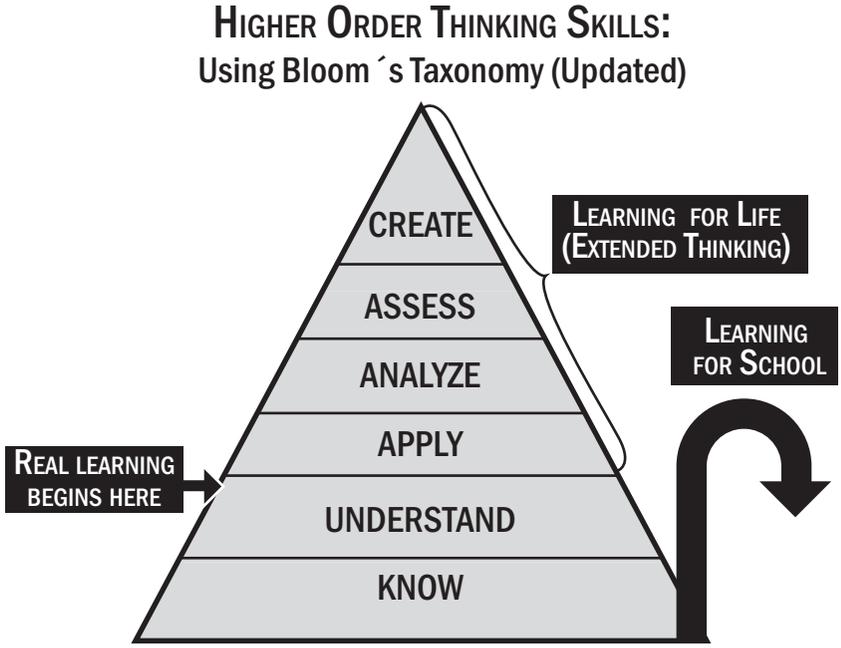

**Benjamin Bloom** 1913-1999: United States of America

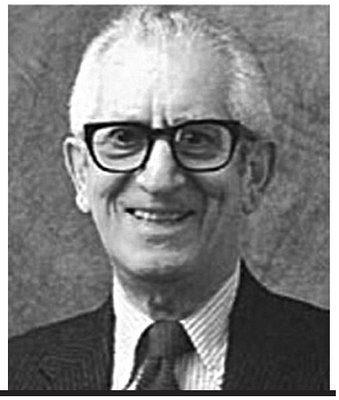
Bloom is most famous for his simply-designed triangle, illustrating in a hierarchical format, how people best learn to reach critical thinking.

the two lowest levels, important, but only basic, are based mainly on memorization, drill, practice, and repetition.

Bloom said that real learning begins at the application level. Once beyond application level, learning becomes deeper, more profound, and challenges learners of any age to think critically.

Bloom's Taxonomy is useful at any age level... even kindergarden children, at their level of context, can be guided to think critically. When you direct a small child, saying, " in pairs, create a scene from the story using this shoe box, crayons, paper , scissors, and glue.", you are raising his/her thinking level to the highest point of Bloom's Taxonomy: creating something new.



**Madeline Hunter** 1916 - 1994: Canada

Dr. Madeline Hunter studied at UCLA. She developed the idea of the lesson cycle, effective teaching practices, and teaching for mastery.

***Mastery teaching and learning:***

"Mastery" is not perfection. Mastery means that 85% of your students master 85% of the material. Dr. Hunter made an enormous impact on educational practices and raising academic quality in the U.S.A. and Canada.

Because of Dr. Madeline Hunter's ideas and educational practices, emphasizing and implementing Bloom's Taxonomy, questioning techniques, and effective teaching practices, Canada has been in

the top three countries world-wide, in the PISA exam of fifteen year old students in mathematics, science, and language.

» Developed model for teaching/learning
» Mastery teaching and learning
» Teachers are decision makers: for (1) Content (2) Teacher behavior (3) Learner behavior

***Effective instruction:***
1. Objectives are essential
2. The Set (hook, focus)
3. Standards/Expectations
4. Teaching: input, demo, modeling, inquiry and checking for understanding
5. Guided practice
6. Closure
7. Independent practice

**STEPHEN KRASHEN** born 1941: United States of America

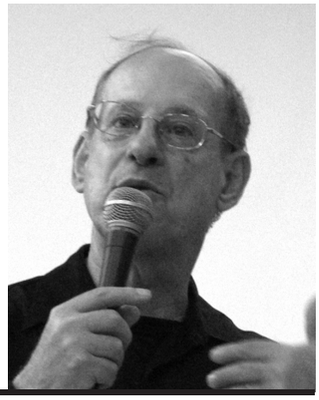
Dr. Krashen, from the University of Southern California (USC), has made a huge impact on second language acquisition, guiding us to change how second or third languages are taught, moving us away from emphasis on grammar, and more on oral fluency.

His famous phrase, "recognition precedes production" has been the guide for language acquisition for the past 30 years.

Krashen's four decades of research on the differences and results of language acquisition as opposed to language learning has formed the base of current language teaching.

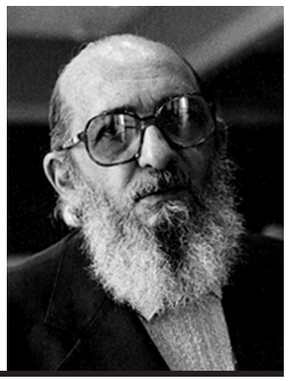
Basically, acquisition involves learning language via games, songs, conversations, watching movies, and verbalized interactions with others.

Learning relates to a formalized approach, texts, workbooks, drill, copying, conjugating, and emphasizing grammar.



Forty years of research has convinced Krashen that language acquisition obtains much better results than formal, traditional language teaching. Krashen's work greatly influenced David Marsh and committees in Finland which developed the C.L.I.L. philosophy, presented to the European Union in 1994, in support of the European Framework of Language Learning, which set the A-1 through C-2 levels of language achievement.

**PAULO FREIRE** 1921 - 1997: Brazil



Freire's ideas centered around treating students with dignity.
He won the nobel prize for literature with his book, "Pedagogy of the Oppressed".
He said that the "banking concept" of education had to stop!
By this, Freire meant that students' brains were being filled with memorized data and facts, and no thinking was allowed.
Once the "bank" was full of deposits of data, it was time for withdrawal of the data, by a regurgitation of facts, recorded in tests, orally, or in essays.
Freire wanted these practices to stop, so students could think creatively.

**THEODORE SIZER** 1932 - 2009: United States of America

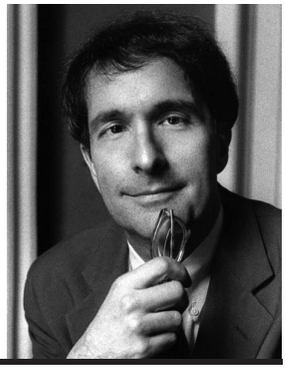
Educational reform, emphasis on importance of learning quality.
He Founded the Coalition of Essential Schools CES (over 600 members).
"Less is More", depth over coverage.
"Do more with less" are his ideas.

***Other Ideas:***

1. Use one´s mind well
2. Demonstration of mastery.
3. Decency and trust.
4. Student is worker - teacher is coach.

**HOWARD GARDNER** 1943 - : United States of America

From when Howard Gardner first published Frames of Mind, in 1984, presenting his theory of multiple intelligences, his ideas were accepted by educators because they explained the wide differences we were seeing in the classrooms. Today, Gardner's theories have been widely acccepted as having validity.
Brain studies, for example, are showing that there is brain stimulation in the cognitive section of the brain when physical kinesthetic activities occur.
Gardner´s research has done much to promote and support the various learning styles that humans have. Gardner's definition of intelligence is:



**The ability to solve problems, or, to be able to create new things that are useful to your life.**

***Type of intelligences according to Gardner***

- » Linguistic
- » Logical/Mathematical
- » Spatial/Visual
- » Bodily/Kinesthetic
- » Musical/Rhythmic
- » Interpersonal
- » Intrapersonal
- » Naturalist

**DANIEL GOLEMAN** 1946 -: United States of America

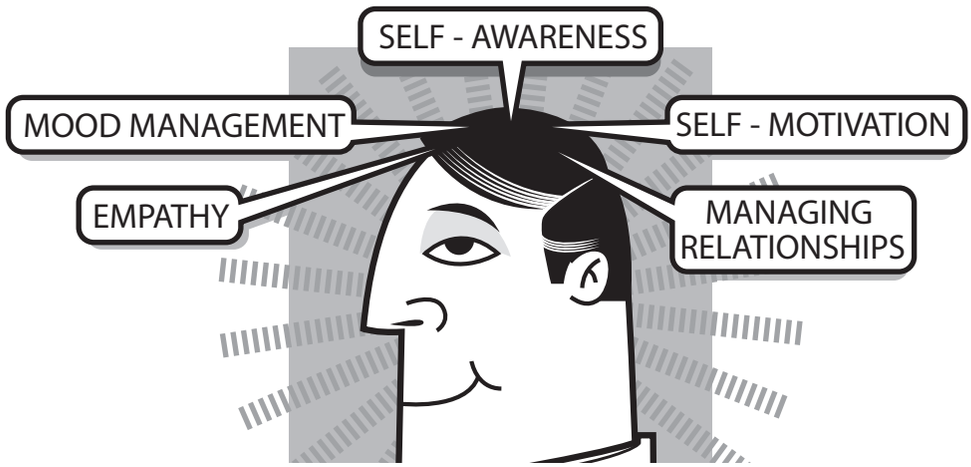
Ten years after Gardner's book, Frames of Mind, was published Dr. Daniel Goleman published, "E.Q. Emotional Quotient" , a book about the importance of emotional intelligence.

In Gardner´s eight kinds of intelligence, interpersonal and intrapersonal certainly are part of emotional intelligence, but Goleman's research took him more deeply into the world of emotional intelligence.

In fact, Goleman once said that all the multiple intelligences in the world won't lead you to success if you don't have emotional intelligence.

In Daniel Goleman's 1994 Book: "E.Q." he states that emotional intelligence is in the affective domain of the brain.

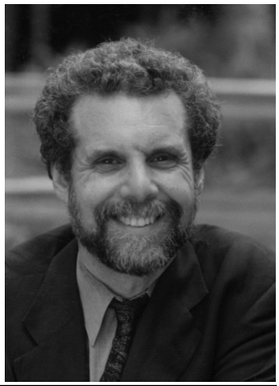
*"If we do not have Emotional Intelligence, we cannot utilize all our other intelligences well."*




## IT IS POSSIBLE TO IMPROVE OUR E.Q. HOW?

By putting into practice:

| | | |
|---|---|---|
| ***self-knowledge*** | | ***self-control*** |
| ***self-motivation*** | ***empathy*** | ***cooperation*** |
| ***perseverance*** | | ***communication*** |



Teachers, parents, and adults working with children need to help children develop the seven skills listed above. As children improve in these seven areas, they will help children/adults reach the five emotional intelligence characteristics.

Each of the five characteristics of emotional intelligences includes various skills as listed above.

For example, "managing relationships" depends on a person's ability to have self-knowledge, self-control, self-motivation, empathy, perserverance, and the ability to communicate and cooperate.

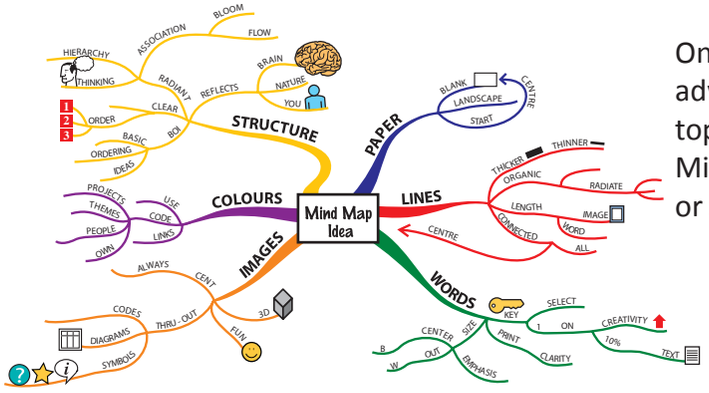
**DR. TONY BUZAN** 1942 -: United Kingdom

Dr. Tony Buzan invented the mind map as a very specific type of graphic organizer.

**What is a Mind Map?**

It is a diagram, usually summarizing a topic, which has five basic characteristics.

1. a central, core, where the topic is written.
2. branches or arms, extending off from the central core.
3. words
4. drawings
5. colors




On the left you can see a sample of an advanced, complicated mind map on the topic of Time Management.
Mind maps can be completed in pairs or small teams.

***Advantages of Mind Mapping:***

» Students remember better when material is graphically organized.

» The brain is geared to receive graphics better than words.

**DR. ROBERT MARZANO** Birth year is unavailable. (40+ years in educational research, puts Marzano approximately 60+ years): United States of America.

Dr. Robert Marzano is a researcher and educational investigator; he is founder of Marzano Research Labs in Colorado, U.S.A. Marzano's research has led him to develop simple, effective, and efficient ways to get mastery results in your classroom.

» Marzano Research Labs: CO

» Educator, speaker, author, teacher, advocate and developer.

» Class instruction that works.

» Integrating technology.

» Student achievement is non-negotiable; mastery.

» 2012: "Change Begins in the Classroom" (Doberti, 2010)

***Classroom Instructions That Work***
The Nine Essentials

**1. Identifying similarities and differences**
Applications: Venn diagrams, charts, metaphors, analogies
Examples: Renzulli's Model, cats/humans; charts for grammar or math practice

**2. Summarizing and note taking**
Applications: Provide rules for creating a summary; predictions; question what is unclear in the text;
Use teacher-prepared notes, stick to consistent format.
Examples: Bloom's Taxonomy, Maslow's Hierarchy of Needs, Or, "How do you think this story will end?"

**3. Reinforcing effort and providing recognition**
Applications: Share stories about people who did not give up; have students log their weekly efforts and achievements; give awards for individual accomplishments; suggest ways to improve; offer praise
Examples: "Great work!", a star or sticker, a pencil or candy, points; stories that inspire

**4. Homework and practice**
Applications: establish a homework policy; tell students homework is only for practice; vary feedback on homework; assign timed quizzes for homework, reporting speed and accuracy; focus on difficult concepts; have practice periods.
Examples: No homework on Fridays or holidays; prior guided practice; 5 minute drills for practice; it needs to be short and meaningful, not boring and tedious.

**5. Nonlinguistic representations**
Applications: Use symbols, use physical models and physical movement which help to increase brain activity.
Examples: globe, landmasses, maps; pictures; letter shapes with bodies; syllable clapping, moving, hand signals.

**6. Cooperative learning**
Applications: Group students by various criteria; vary group size and objectives; design group learning projects.
Examples: Science project: Las Abuelas de la Plaza de Mayo; team responsibilities: such as the Speaker, the Motivator, the Secretary, the Collector, rotating the roles.

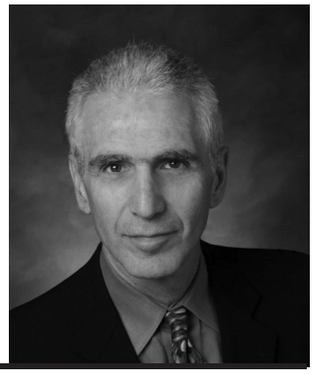
**7. Setting objectives and providing feedback**
Applications: Set core goal for a unit; get students thinking about their interests; use contracts to outline specific goals. Make feedback corrective, timely, and specific; encourage students to lead

feedback sessions.
Examples: S K O R = Specific Knowledge of Results; daily objectives on the board for students to copy;
"Fact of the Day".

**8. Generating and testing hypotheses**
Applications: Ask students to predict what would happen if something (such as government) were changed. Ask students to build something using limited resources.

Examples: See film, "Good Morning, Miss Toliver" or "Teachers"; "plastic bag" projects; straws and pins; experiments; "What if…..?", virtual labs.

**9. Cues, questions, and advanced organizers**
Applications: Pause briefly after asking a question; vary style;
there are many ways to expose students to information before they "learn" it.
Examples: Give "wait time"; important dates graphic; term outline of topics to be covered; daily vocabulary practice PRIOR to the material.



***So… what can we do to improve our schools?***
***DISCUSS.***

**DR. MIKE SCHMOKER** (birth year unavailable): United States of America
Dr. Mike Schmoker is on a campaign of reform in U.S.A. education. He says the curriculum in the United States is too easy. He calls this "The Crayola Curriculum".
Schmoker sees change as not only possible, but in a relatively short time.
His book, "Results Now!" sees major improvement in entire school systems, with stronger academic emphasis, in fewer than 3 years, if the school stakeholders buy into the idea of quality of work, not quantity of work.

**Results Now!**
- » How to Make effective changes ina relatively short time.
- » Forget the "Crayola Curriculum".
- » Quality and depth, not quantity

**DR. JIM CUMMINS** 1928 - : United States of America/Canada

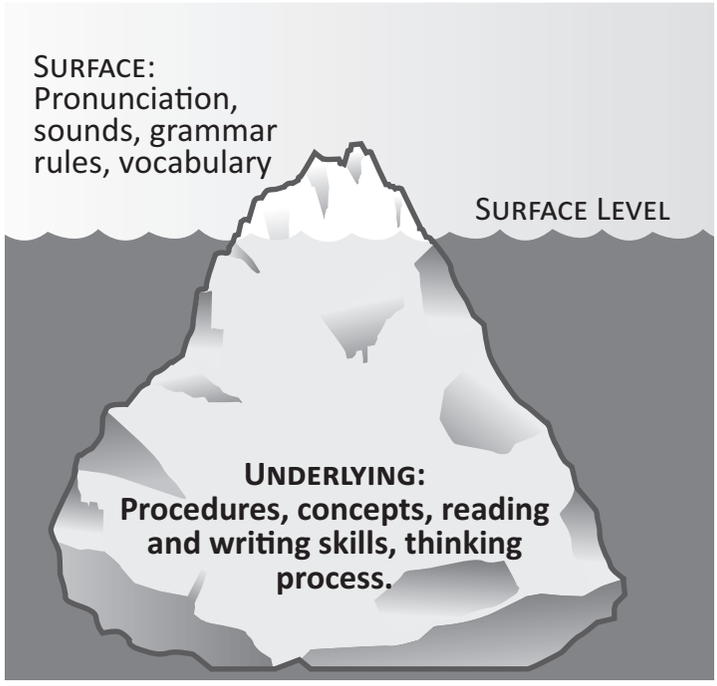
Jim Cummins, currently working in Toronto with English Second Language students, has made major contributions to second language studies, promoting that students need to learn subjects in their second language (L-2, i.e. English) if they are to be successful. All classes in English give the maximum exposure to English. This idea was eventually absorbed into CLIL philosophy.

Cummins was concerned with assessments, and recognized that two types of evaluations are needed in language acquisition:

***(1) Basic Interpersonal Oral Communication (BICS)***
***(2) Cognitive / Academic Language Proficiency (CALP)***

**BICS:**
» Concrete, integrated language.
» Non- verbal at times.
» Motivation is generated by necessity.
» Communication is oral and immediate.
» Not too demanding at cognitive levels.
» The content is important.

**CALP:**
» The language is open, using context.
» Non verbal is limited.
» Motivation is difficult to achieve in the classroom.
» Predominantly written work.
» High cognitive demands.
» Importance of grammatical format.




**Dr. Jerome Bruner** 1915 - United States of America

In 1960 Bruner published his classic text, The Process of Education. This was a landmark book, which led to much experimentation and a broad range of educational programs in the 1960's.

Howard Gardner and other young researchers worked under Bruner and were much-influenced by his work. In the early 70's Bruner left Harvard to teach at University of Oxford for several years (1972 - 1979). He returned to Harvard in 1979.

Later he joined the New York University of Law, where he was still working as a senior research fellow (at the age of 93).

Bruner was one of the founding fathers of Constructivist Theory.

Constructivism is a broad conceptual framework with numerous perspectives, and Bruner's is only one. Bruner's theoretical framework is based on the theme that learners construct new ideas or concepts based upon existing knowledge. Learning is an active process. Facets of the process include selection and transformation of information, decision making, generating hypotheses, and making meaning from information and experiences.

Bruner was influenced by Dr. Jean Piaget's ideas about cognitive development in children. He presented the point of view that children are active problem-solvers and capable of exploring "difficult subjects".

Bruner introduced the ideas of "readiness for learning" and the "spiral curriculum". He believed that any subject could be taught at any stage of development in a way that fit the child's cognitive abilities.

Spiral curriculum refers to the idea of revisiting basic ideas over and over, building upon them and elaborating to the level of full understanding and mastery.

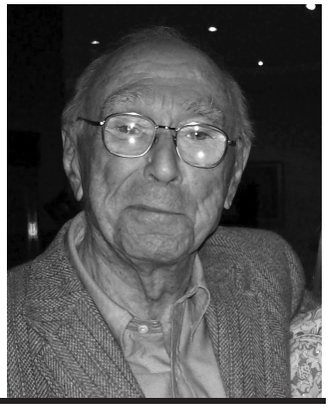
He investigated motivation for learning. He felt that ideally, interest in the subject matter is the best stimulus for learning. Bruner did not like external competitive goals such as grades or class ranking.

Eventually, Bruner was strongly influenced by Lev Vygotsky's writings, and began to adopt a social and political view of learning.

Bruner argued that aspects of cognitive performance are facilitated by language. He stressed the importance of the social setting in the acquisition of language.

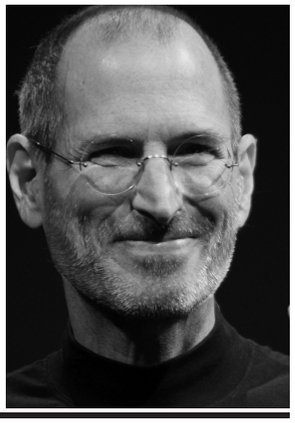
His views are similar to those of Piaget, but he places more emphasis on the social influences on development. The earliest social setting is the mother-child dyad, where children work out the meanings of utterances to which they are repeatedly exposed. Bruner identified several important social devices including joint attention, mutual gaze, and turn-taking.

Jerome Bruner has influenced language learning for over 60 years!



**STEVE JOBS** 1955-2011: United States of America

There's not an educator in the world who could deny that Steve Jobs, and his brain-child, the Apple computer, have made one of the most powerful changes in education in the 21st century.



Music, literature, mathematics, science, styles of learning, visual and auditory stimulation, user-friendly technology are the legacies of Steve Jobs.

The Apple laptop, the i-Pad, the i-Phone, the i-Pod, and thousands of applications for enhancing learning are Steve Jobs' contributions to education of the 21st century.

The age of technolgy passed in the 20th century. In the 21st century, we need to use the technology we have in order to enhance learning. Thank you, Steve Jobs, for bringing education into the 21st century.

# PART III

## Arrangement of Leaders by their Psychological Theories

**1. Behaviorist**
**2. Cognitive**
**3. Constructivist, Social, and Situational**
**4. Motivational and Humanist**

Before we begin this section, you need to be aware of two important facts:
1. Many of the educational leaders described in PART II, cannot fit easily into a specific "psychological theory". The base of what they stood for and their teachings is too global and profound to be placed within one specific "theory". There is so much over-lapping of characteristics that it would be giving you false information to place one of our leaders into one, sole category.
Carl Rogers, for example, is said to be a "humanistic" psychologist and educator. His teachings show great faith in the potential of human beings to resolve many of their own problems. Yet, within his works there are some aspects of behaviorist, cognitive, social, and motivational psychology.
Another example, Jean Piaget, was a biologist, a scientist. Yet he devoted more than 50 years of his life researching and documenting the stages of cognitive and social growth of children, showing at which ages they were ready to learn, focusing also on the humanistic aspects of teaching so that children could be ready for learning.
It is very important, therefore, that you look at the global aspects and influences of each leader, and not be too quick to categorize him or her.
Furthermore, be aware that most educational leaders would find it too confining to simplify their complex theories into one, sole "psychological theory".

2. Some of the names you'll find listed within the four psychological theories were NOT included in Section II's list of educational leaders because they were NOT educational leaders. They were psychologists or researchers, or they had little impact and no influence on educational practice, techniques, or any lasting improvements.

Ivan Pavlov, for example, a Russian researcher, of the "Behaviorist Theory", who taught dogs to salivate when he rang a bell, tried to apply his conditioning techniques to human learning, but his impact had little influence over human learning when motivation or a strong will were taken into consideration.

## Psychological Theories

NOTES:
1. Theories are arranged chronologically, by the year of birth of the theory's major researcher or when the theory was first developed. This is to help you observe how one theory or researcher may have influenced another.
Researchers currently living are placed at the end, with a note of where they are living in 2013.
2. Names of researchers with an asterisk ( * ) are included among the 25 leaders in Part II.

### 1. Behavorist theories

**a. PAVLOV, Ivan (1849 - 1936) Classic Conditioning:**

Pavlov provided a stimulus and a response. He showed dogs meat, rang a bell or blew a whistle, got them to salivate, and then fed them the meat. Eventually, just by ringing the bell, (no meat) the dogs would salivate. Pavlov's research on conditional reflexes greatly influenced not only science, but also popular culture. Pavlovian conditioning was a major theme in Aldous Huxley's novel, Brave New World, but his works have had little influence on education, especially since it is well-known that he experimented with children, even having conducted operations, removing their salivary glands.

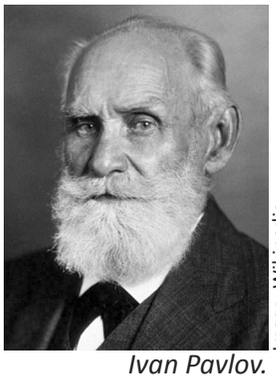


Image: Wikipedia

*Ivan Pavlov.*

**b. SKINNER, B.F. (1904 - 1990) Operant Conditioning**

Skinner invented the "operant conditioning chamber", also known as the "Skinner Box". He was a firm believer of the idea that human free will was actually an illusion, and that any human action was the result of the consequences of that same action. If the consequences were bad, there was a high chance that the action would not be repeated; however, if the consequences were good, the actions that lead to it would be reinforced. He called this the "principle of reinforcement".
He used his own daughter as a subject, putting her in the box, for example, and teaching her the operations she would need to do to get out of the box. He also experimented with rats in a maze, teaching them how they could release levers to get out.

**c. BANDURA, Albert ( 1925 - ) Social Learning Theory**

This theory is based on the idea that we learn our social habits, such as covering your mouth when you yawn, by constant reminders/conditioning by adults/parents, until the social habits become ingrained. Most of his research dealt with cause of aggressive behavior.
The Social Learning Theory proposes that there are three systems that control behavior.

***First:*** A prior stimulus greatly influences the time and response of behavior. The stimulus that occurs before a behavioral response must be appropriate in relationship to social context and performers.

***Second:*** Following a response, the reinforcements, by experience or observation, will greatly impact the occurrence of the behavior in the future.

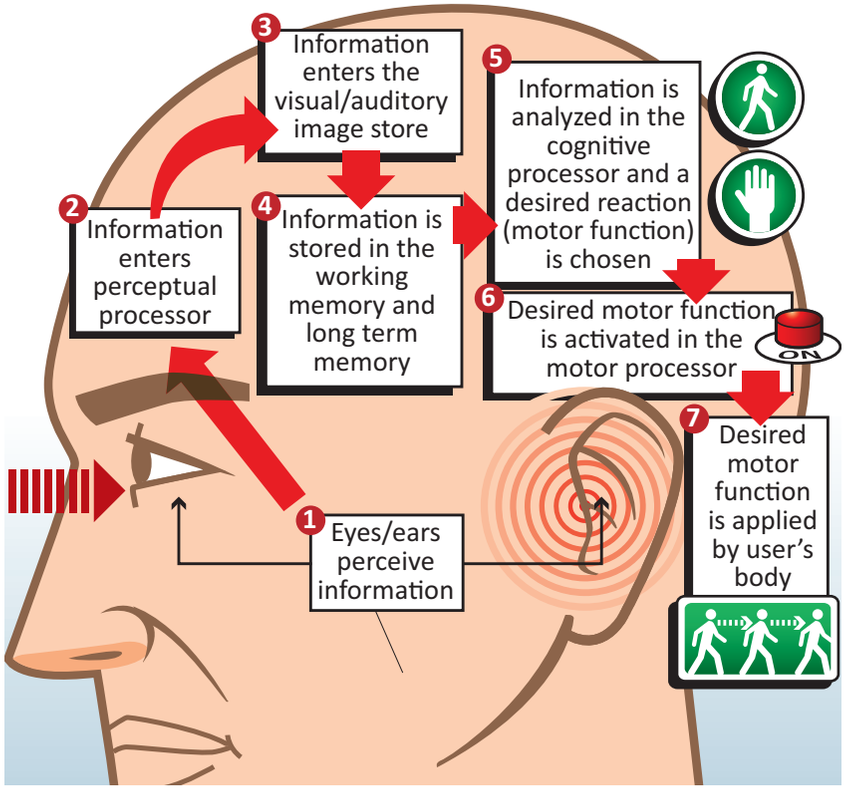
***Third:*** This point explains the importance of cognitive functions in social learning. For example, for aggressive behavior to occur, some people become easily angered by the sight or thought of individuals with whom they have had hostile encounters in the past, and this memory is acquired through the learning process.

**d. GOMS Model (1983) Stuart Card, Thomas P. Moran, and Allen Newell**

***GOMS = Goals, Operations, Methods, and Selection Rules***

GOMS was explained in Card, Moran, and Newell's book, The Psychology of Human Computer Interaction.
Following these initial steps, additional models for analysis evolved and are heavily used in the engineering-oriented usability community.

**The GOMS method assumes that information is comprehended by a user in the following manner:**



## 2. Cognitive Theories

### a. TOLMAN, Edward (1886 - 1959) Gestalt Psychology

Tolman always said he was strongly influenced by the Gestalt psychologists, especially Kurt Lewin and Kurt Koffka.

Tolman is best known for his studies of learning in rats using mazes. His major theoretical contributions came in his 1932 book, Purposive Behavior in Animals and Men.

Although Tolman was firmly behaviorist in his methodology, he was not a radical behaviorist like B.F. Skinner.

As the title of his 1932 book indicates, he wanted to use behavioral methods to gain an understanding of the mental processes of humans and other animals.

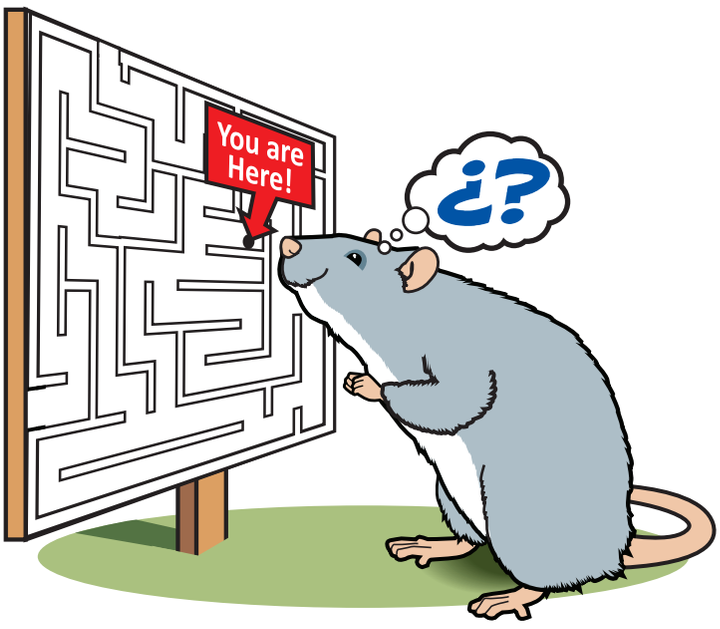
In his studies of learning in rats, Tolman sought to demonstrate that animals could learn facts about the world that they could subsequently use in a flexible manner, rather than simply learning automatic responses that were triggered off by environmental stimuli. In the language of the time, Tolman was an "S-S" (stimulus-stimulus), non-reinforcement theorist. He drew on Gestalt psychology to argue that animals could learn the connections between stimuli and did not need any explicit biologically significant event to make learning occur.

***This is known as latent learning.***

Tolman demonstrated that rats that had explored a maze that contained food while they were not hungry were able to run it correctly on the first trial when they entered it having now been made hungry. Learning the map the first time without having a reward was termed the latent learning period.

Skinner's iconoclastic paper of 1950, entitled "Are Theories of Learning Necessary?" persuaded many psychologists interested in animal learning that it was more productive to focus on the behavior itself rather than using it to make hypotheses about mental states.

The influence of Tolman's ideas declined rapidly in the later 1950s and 1960s. However, his achievements had been considerable, and prepared the ground for much later work in cognitive psychology, as psychologists began to discover and apply decision theory.




Tolman's 1948 paper introduced the concept of a cognitive map, which has found extensive application in almost every field of psychology, frequently among scientists who have no idea that they are using ideas first formulated to explain the behavior of rats in mazes.

Tolman assessed both response learning and place learning. Response learning is when the rat knows that the response of going a certain way in the maze will always lead to food. Place learning is when the rats learn to associate the food in a specific spot each

time.

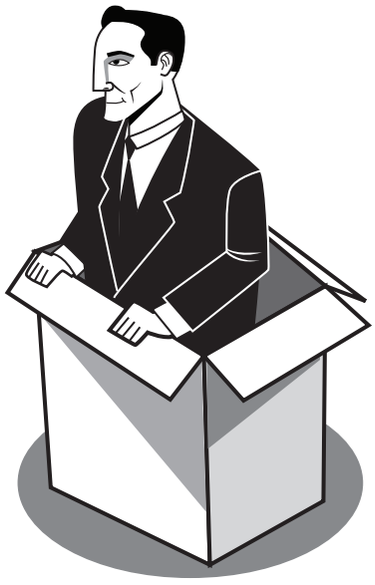
In his trials he observed that all of the rats in the place-learning maze learned to run the correct path within eight trials, but, none of the response-learning rats learned that quickly, and some did not even learn it at all after seventy-two trials.

Furthermore, when in the last quarter of the twentieth century animal psychologists took a cue from the success of human cognitive psychology, and began to renew the study of animal cognition, many of them turned to Tolman's ideas and to his maze techniques.

Of the three great figures of animal psychology of the middle twentieth century, Tolman, Hull, and Skinner, it can reasonably be claimed that it is Tolman's legacy that is currently the liveliest, certainly in terms of academic research. Tolman was much concerned that psychology should be applied to try to solve human problems.

In 1963, at the insistence of the then President of the University of California, Clark Kerr, the University named its newly constructed Education and Psychology Faculty Building at the Berkeley Campus, "Tolman Hall", in his honor. His widow was present at the dedication ceremony. His portrait hangs in the entrance hall of the building.

**b. BARTLETT, Frederic (1886 -1969) Schema Theory**



Before psychology separated from philosophy, the term "schema" was prominently discussed in philosophy, with the original idea proposed by German philosopher, Immanuel Kant (1724-1804), as innate structures used to help us perceive the world.

Early developments of the idea in psychology emerged with the Gestalt psychologists and Jean Piaget. The term "schema" was re-introduced by Piaget in 1926. The concept was introduced into psychology and education through the work of the British psychologist Frederic Bartlett.

Bartlett is credited with first proposing the concept of schema (plural: schemata). He arrived at the concept from studies of memory he conducted in which subjects recalled details of stories that were not actually there for them to read. He suggested that memory takes the form of schema, which provides a mental framework for understanding and remembering information.

Bartlett's work was crucially important in demonstrating that long-term memories are neither fixed nor immutable but are constantly being adjusted as our schemata evolve with experience.

In a sense it supports the existentialist view that we construct our past and present in a constant process of narrative/discursive adjustment, and that much of what we "remember" is actually confabulated, adjusted, and rationalized. It is probable that large sections of our memory (both episodic and semantic) are irretrievable to our conscious memory at any given time.

Many terms have been used to describe schema, such as "frame", "scene", and "script".

Schema is a structured cluster of concepts. It can be used to represent objects, scenarios or sequences of events or relations.

A schema is the mental framework that is created as children interact with their physical and

social environments.
For example, many 3-year-olds insist that the sun is alive because it comes up in the morning and goes down at night. According to Piaget, these children are operating based on a simple cognitive schema that things that move are alive.
At any age, children rely on their current cognitive structures to understand the world around them. Moreover, younger and older children may often interpret and respond to the same objects and events in very different ways because cognitive structures take different forms at different ages.

Piaget (1953) described three kinds of intellectual structures:

**1. Behavioral schemata:**
organized patterns of behavior that are used to represent and respond to objects and experiences
**2. Symbolic schemata:**
internal mental symbols (such as images or verbal codes) that one uses to represent aspects of experience
**3. Operational schemata:**
internal mental activity that one performs on objects of thought

According to Piaget, children use the process of assimilation and accommodation to create a schema or mental framework for how they perceive and/or interpret what they are experiencing. As a result, the early concepts of young children tend to be more global or general in nature.

Similarly, Gallagher and Reid (1981) maintained that adults view children's concepts as highly generalized and even inaccurate. With added experience, interactions, and maturity, these concepts become refined and more detailed. Overall, making sense of the world from a child's perspective is a very complex and time-consuming process.

***Schemata are:***

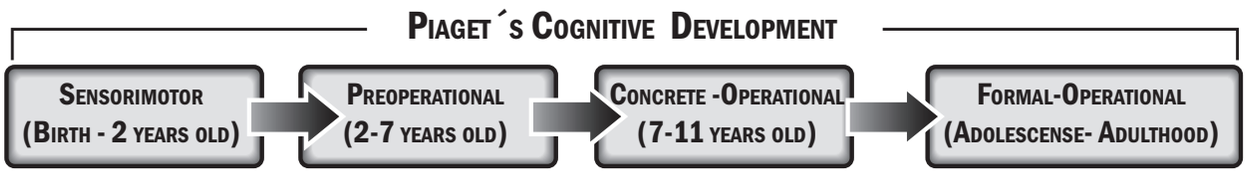
- Critically important building blocks of conceptual development
- Constantly in the process of being modified or changed
- Modified by on-going experiences
- Generalized ideas, usually based on experience or prior knowledge.

These schemata are constantly being revised and elaborated upon each time the child encounters new experiences. In doing this children create their own unique understanding of the world, interpret their own experiences and knowledge, and subsequently use this knowledge to solve more complex problems.
In a neurological sense, the brain/mind is constantly working to build and rebuild itself as it takes in, adapts/modifies new information, and enhances understanding.
Schemata influence attention and the absorption of new knowledge: people are more likely to

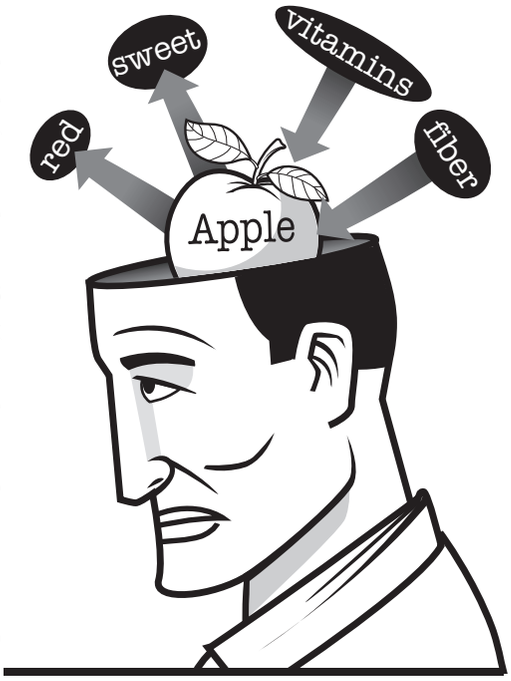
notice things that fit into their schema, while re-interpreting contradictions to the schema as exceptions or distorting them to fit.
Schemata have a tendency to remain unchanged, even in the face of contradictory information. Schemata can help in understanding the world. Most situations do not require effortful thought when using schema, since automatic thought is all that is required. People can organize new perceptions into schemata quickly.
People use schemata to organize current knowledge and provide a framework for future understanding. Examples of schemata include academic rubrics, stereotypes, social roles, and archetypes. In Piaget's theory of development, children adopt a series of schemata to understand the world.

**c. * PIAGET, Jean (1896 - 1980) Stage Theory of Cognitive Development**

The Theory of Cognitive Development is a comprehensive theory about the nature and development of human intelligence, first developed by Jean Piaget.
It is primarily known as a developmental stage theory, but in fact, it deals with the nature of knowledge itself and how humans come gradually to acquire, construct, and use it. To Piaget, cognitive development was a progressive reorganization of mental processes as a result of biological maturation and environmental experience.
Children construct an understanding of the world around them, then experience discrepancies between what they already know and what they discover in their environment. Moreover, Piaget claims the idea that cognitive development is at the center of human organism, and that language is contingent on cognitive development.
Intelligence develops in a series of stages that are related to age and are progressive because one stage must be accomplished before the next can occur. For each stage of development the child forms a view of reality for that age period. At the next stage, the child must keep up with earlier levels of mental abilities to reconstruct concepts.
Piaget conceived intellectual development as an upward expanding spiral in which children must constantly reconstruct the ideas formed at earlier levels with new, higher order concepts acquired at the next level.
It is primarily Piaget's logical model of intellectual development that was incorporated into American psychology when Piaget's ideas were "rediscovered" in the 1960s.



**d. AUSUBEL, David (1918 - 2008) Assimilation Theory**




Ausubel was influenced by the teachings of Jean Piaget. Ausubel explained how people acquire and assimilate knowledge. Ausubel theorized that people acquire knowledge primarily by being exposed directly to it rather than through discovery. In other words, Ausubel believed that understanding concepts, principles, and ideas are achieved through deductive reasoning.

Similarly, he believed in the idea of meaningful learning as opposed to rote memorization. In the preface to his book Educational Psychology: A Cognitive View, he wrote,

"If I had to reduce all of educational psychology to just one principle, I would say this:

The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly." (Ausubel, 1968, p. vi)

Through his belief of meaningful learning, Ausubel developed his theory of advance organizers which help students to assimilate new material.

An advance organizer is information presented by an instructor that helps the student organize new incoming information. This is achieved by directing attention to what is important in the coming material, highlighting relationships, and providing a reminder about relevant prior knowledge.

Advance organizers make it easier to learn new material of a complex or otherwise difficult nature, provided the following two conditions are met:

» 1. The student must process and understand the information presented in the organizer—this increases the effectiveness of the organizer itself.

» 2. The organizer must indicate the relations among the basic concepts and terms that will be used.

Ausubel defends advance organizers by stating that there is no one specific example in constructing advance organizers as they "always depends on the nature of the learning material, the age of the learner, and his degree of prior familiarity with the learning passage" (Ausubel, 1978, p. 251).

**e. WEINER, Bernard (1935 - ) Attribution Theory**

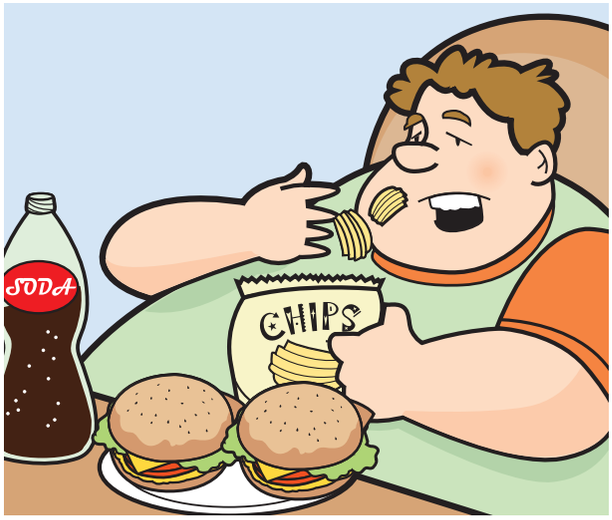
Attribution Theory explains the emotional and motivational bases of academic success and failure. Weiner believes that throughout education, we all have similar psychodynamics in the classroom, so students tend to seek explanation for personal failure.

» Attribution theory is concerned with how individuals interpret events, and how this relates to their thinking and behavior.
» Attribution theory assumes that people try to determine why people do what they do, i.e., attribute causes to behavior.
» A person seeking to understand why another person did something may attribute one or more causes to that behavior.

A three-stage process underlies an attribution:
(1) The person must perceive or observe the behavior.

(2) Then, the person must believe that the behavior was intentionally performed.

(3) Then, the person must determine if they believe the other person was forced to perform the behavior (in which case the cause is attributed to the situation) or not (in which case the cause is attributed to the other person).
Weiner raised the question on what is considered "sin" and what is "sickness." An example he used was obesity.




***Obesity due to overeating is a sin; obesity because of a thyroid problem is a sickness.***

For over 30 years, the fields of personality and social psychology have been influenced by the work of Bernard Weiner. His attribution theory of motivation and emotions has contributed greatly to the educational psychologist's understanding of how perceived causation influences motivation, behavior, and emotions.

**f. JOHNSON-LAIRD, Philip (1936 - ) Mental Models**

Philip Johnson-Laird is a professor of Psychology at Princeton University, and author of several books on human cognition and the psychology of reasoning. Johnson-Laird published Mental Models: Towards a Cognitive Science of Language, Inference and Consciousness in 1983.

A mental model is an explanation of someone's thought process about how something works in the real world. It is a representation of the surrounding world, the relationships between its various parts and a person's intuitive perception about his or her own acts and their consequences. Mental models can help shape behavior and set an approach to solving problems and doing tasks.

A mental model is a kind of internal symbol or representation of external reality, hypothesized to play a major role in cognition.

A general mental model can be defined as:

"The image of the world around us, which we carry in our head, is just a model. Nobody in his head imagines all the world, government, or country. He has only selected concepts, and relationships between them, and uses those to represent the real system."

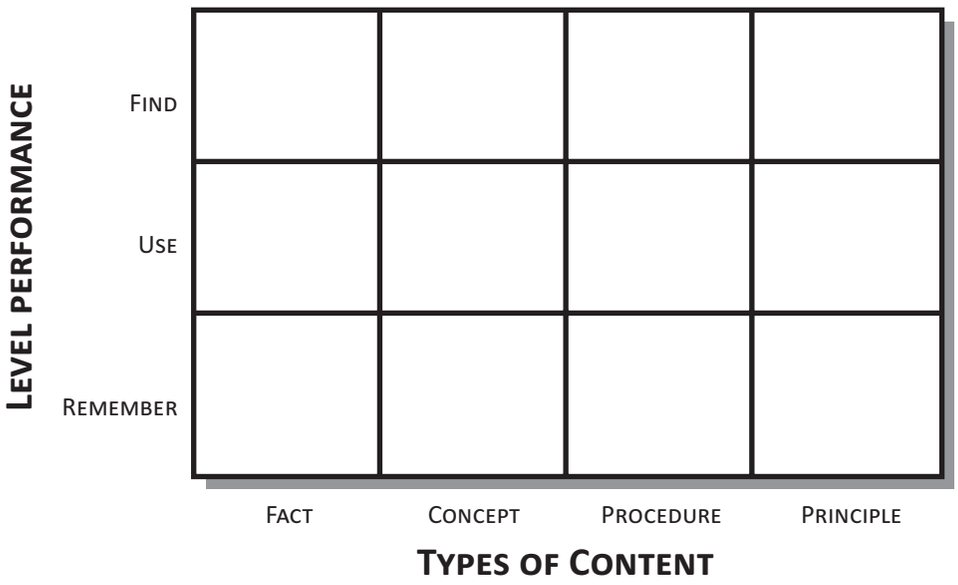
In psychology, the term "mental models" is sometimes used to refer to mental representations or mental simulation generally.

One view of human reasoning is that it depends on mental models. In this view, mental models can be constructed from perception, imagination, or the comprehension of discourse (Johnson-Laird, 1983).

Johnson-Laird developed a theory of mental models which makes the assumption that reasoning depends, not on logical form, but on mental models (Johnson-Laird and Byrne, 1991).

**g. MERRILL, David (developed theory 1983) Component Display Theory**

David Merrill's Component Display Theory (CDT) describes the micro-elements of instruction (single ideas and methods for teaching them). It is designed to work in conjunction with Reigeluth's Elaboration Theory.



***CDT is comprised of three parts:***

» A performance/content dimension comprised of the desired level of student performance and type of content.
» Four primary presentation forms
» A set of prescriptions relating the level of performance and type of content to the presentation forms.
» Merrill further classifies learning into two dimensions:

1. Content, which consists of facts, concepts, procedures, and principles. Content ranges from facts, which are the most basic forms of content, to principles. It is the actual information to be learned.

***The four types of content in The Component Display Theory are:***

**Facts -** logically associated pieces of information. Some examples are names, dates, and events.
**Concepts -** symbols, events, and objects that share characteristics and are identified by the same name.
Concepts make up a large portion of language and understanding them is integral to communication.
**Procedures -** a set of ordered steps, sequenced to solve a problem or accomplish a goal.
**Principles -** work through either cause-and-effect or relationships. They explain or predict why something happens in a particular way.

2. Performance is made up of remembering, using, and generalities. It is classified with remembering as being the simplest form of performance, to finding (generalities) the most advanced. Performance is the manner in which the teacher applies the content.

***The three types of performance are:***

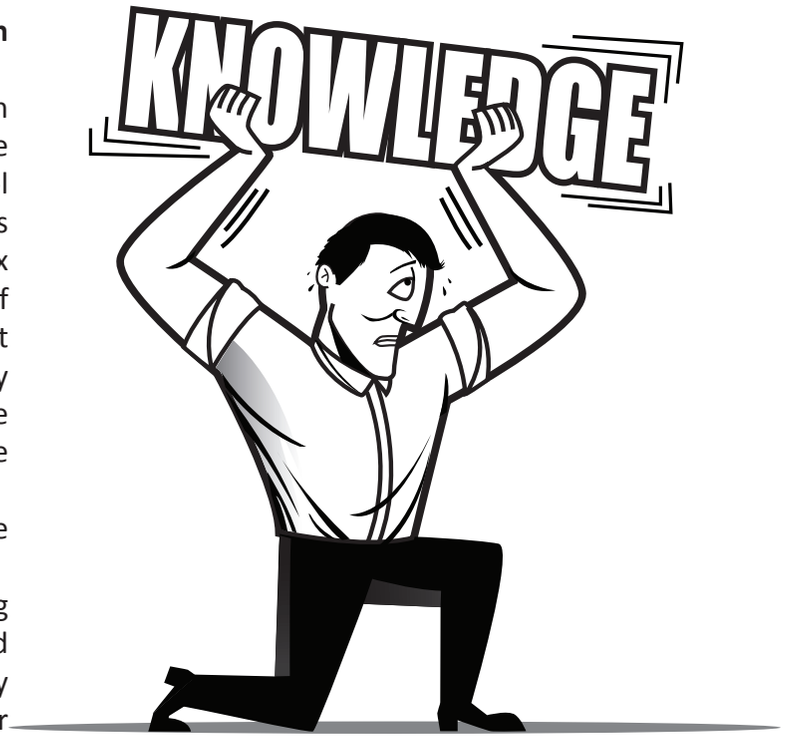
Remembering - the learner is required to search and recall from memory a particular item of information.
Using - the learner directly applies the information to a specific case.
Finding - the learner uses the information to derive a new abstraction, concept, or principle.
By forming a matrix using the two dimensions of content and performance, the instructor determines which elements on the matrix are the goals for the learner:

**Simplified Matrix**

| | Facts | Concepts | Procedures | Principles |
|---|---|---|---|---|
| Remembering | | | | |
| Using | | | | |
| Finding | | | | |

This matrix can be used to organize and plan the use of the Component Display Theory.

**h. SWELLER, John (2013 living in Australia) Cognitive Load Theory**




The term "Cognitive Load" is used in cognitive psychology to illustrate the load related to the executive control of the working memory (WM). This theory contends that during complex learning activities, the amount of information and interactions that must be processed simultaneously can either underload or overload the finite amount of working memory one possesses.

All elements must be processed before meaningful learning can continue.

Instruction may be aimed at teaching learners problem-solving skills and thinking and reasoning skills. Many would agree that people learn better when they can build on what they already understand (known as existing schemata), but the more a person has to learn in a shorter amount of time, the more difficult it is to process that information in working memory.

Consider the difference between having to study a subject in one's native language (L-1) versus trying to study a subject in a foreign language. (L-2) The cognitive load is much higher in the second instance because the brain must work to translate the language while simultaneously trying to understand the new information.

NOTE: If a person learns an L-2 using CLIL philosophy, and the L-2 becomes so much part of the person's linguistic fluency that "translating" isn't necessary, because the person is actually THINKING in the second language, then the cognitive load is no different than for an L-1.

Another aspect of Cognitive Load Theory involves understanding how many discrete units of information can be retained in short-term memory before information loss occurs.

An example of this principle that seems to be commonly cited is the use of 7-digit phone numbers, based on the theory that most people can retain only seven "chunks" of information in their short-term memory.

**i. MAYER, Richard (2013 living in California) Cognitive Theory of Multimedia Learning**

Richard E. Mayer has made significant contributions to theories of cognition and learning, especially as they relate to problem-solving and the design of educational multimedia.

Mayer's best known contribution to the field of educational psychology is Multimedia Learning Theory. which posits that optimal learning occurs when visual and verbal materials are presented together simultaneously.

He was ranked #1 as the most productive educational psychologist in the world for 1991-2001. He is the author of more than 390 publications including 23 books on education, multimedia, and E-learning.

E-learning refers to the use of electronic media and information in education (ICT). E-learning is broadly inclusive of all forms of educational technology and teaching.

E - learning is inclusive of, and is broadly synonymous with multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer-based training (CBT), computer-assisted instruction, or computer-aided instruction (CAI), Internet-based training (IBT), web-based training (WBT), online education, virtual education, virtual learning environments (VLE) (which are also called learning platforms), and digital educational collaboration.

These alternative names emphasize a particular aspect, component or delivery method.

E-learning includes numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as local intranet/extranet and web-based learning.

E-learning can occur in or out of the classroom. It can be self-paced, or may be instructor-led. E-learning is suited to distance-learning and flexible learning, but it can also be used in conjunction with face-to-face teaching, in which case the term blended learning is commonly used.

It is commonly thought that new technologies make a big difference in education. Many proponents of E-learning believe that everyone must be equipped with basic knowledge of technology, as well as use it as a vehicle for reaching educational goals. Mayer's research and his Cognitive Theory of Multimedia Learning support this view.

**j. REIGELUTH, Charles (2013 working at Indiana University) Elaboration Theory**

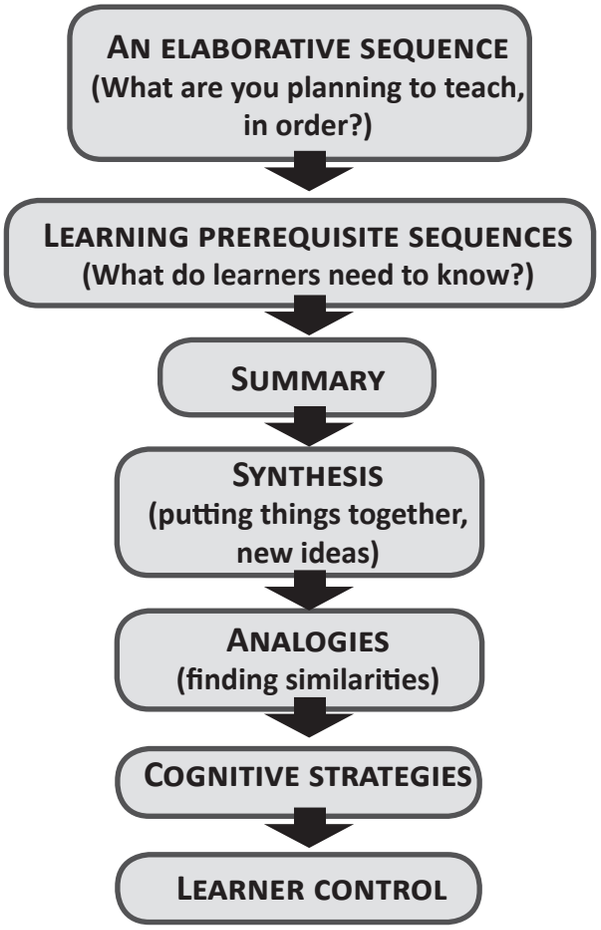
Charles Reigeluth is the creator of an instructional design system called Elaboration Theory, in which information to be learned is arranged so that simpler concepts build up to narrower and more detailed elaborations, thereby placing the content in a meaningful context.

According to the Elaboration Theory, instruction should be organized in increasing order of complexity for optimal learning. For example, when teaching a procedural task, the simplest version of the task is presented first; subsequent lessons present additional versions until the full range of tasks are taught.

In each lesson, the learner should be reminded of all versions taught so far (summary/synthesis).

A key idea of Elaboration Theory is that the learner needs to develop a meaningful context into which subsequent ideas and skills can be assimilated.

***Elaboration Theory proposes seven major strategies:***




The first component is the most critical as far as elaboration theory is concerned. The elaborative sequence is defined as a simple to complex sequence, in which the first lesson epitomizes (rather than summarizes) the ideas and skills that follow.

Epitomizing should be done on the basis of a single type of content (concepts, procedures, principles), although two or more types may be elaborated simultaneously, and should involve the learning of just a few fundamental or representative ideas or skills at the application level.

It is claimed that the elaboration approach results in the formation of more stable cognitive structures and, therefore, better retention and transfer, increased learner motivation, through the creation of meaningful

learning contexts, and the provision of information about the content that allows informed learner control.

Elaboration theory is an extension of the work of David Ausubel (advance organizers) and Jerome Bruner (spiral curriculum).

## 3. Constructivist, Social, and Situational Theories

**a. * VYGOTSKY, Lev (1896 - 1934) Social Development**

His works were "rediscovered", and have been republished since 1962.

Vygotsky's main work was in developmental psychology; he proposed a theory of the development of higher cognitive functions in children that saw reasoning as emerging through practical activity in a social environment.

During the earlier period of his career he argued that the development of reasoning was mediated by signs and therefore contingent on cultural practices and language as well as on universal cognitive processes.

Vygotsky also posited a concept of the "Zone of Proximal Development" (ZPD), often understood to refer to the way in which the acquisition of new knowledge is dependent on previous learning, as well as the availability of instruction.

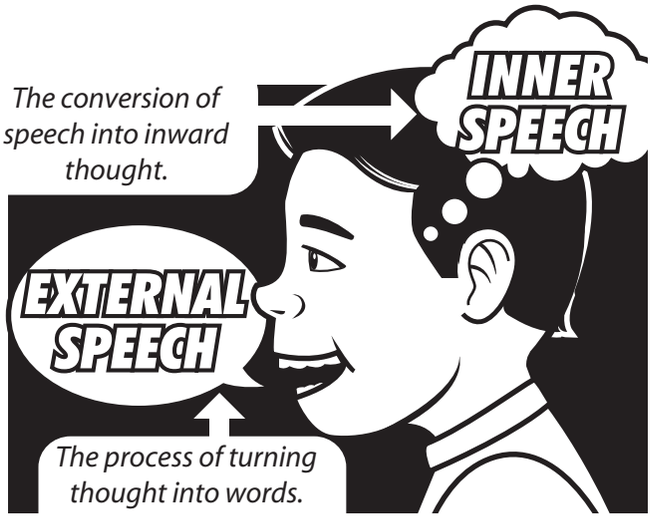
During his lifetime Vygotsky's theories were controversial within the Soviet Union. In the 1930's, Vygotsky's ideas were introduced in the West where they remained virtually unknown until 1970s when they became a central component of the development of new paradigms in developmental and educational psychology.

While initially Vygotsky's theories were ignored in the West, they are today widely known, although scholars do not always agree with them, or agree about what he meant. The early 21st century has seen a trend towards reevaluating scholarly understandings of many of Vygotsky's central concepts and theories.

Basically, Vygotsky sees all learning as dependent on a child's social development.

Perhaps Vygotsky's most important contribution concerns the inter-relationship of language development and thought. This concept, explored in Vygotsky's book Thought and Language, (Russian: Myshlenie i rech, alternative translation: Thinking and Speaking), establishes the explicit and profound connection between speech (both silent inner speech and oral language), and the development of mental concepts and cognitive awareness.

Vygotsky described inner speech as being qualitatively different from normal (external) speech. Although Vygotsky believed inner speech developed from external speech via a gradual process of internalization, with younger children only really able to "think out-loud," he claimed that in its mature form, inner speech (thinking) would be unintelligible to anyone except the thinker, and would not resemble spoken language as we know it (in particular, being greatly compressed). Hence, thought itself develops socially.




Language starts as a tool external to the child used for social interaction. The child guides personal behavior by using this tool in a kind of self-talk or "thinking out loud." Initially, self-talk is very much a tool of social interaction and it tapers to negligible levels when the child is alone or with deaf children.

Gradually, self-talk is used more as a tool for self-directed and self-regulating behavior. Because speaking has been appropriated and internalized, self-talk is no longer present around the time the child starts school. Self-talk "develops along a rising not a declining, curve; it goes through an evolution, not an involution. In the end, it becomes inner speech" (Vygotsky, 1987, pg. 57).

Speaking has thus developed along two lines: the line of social communication and the line of inner speech, by which the child mediates and regulates his or her activity through their thoughts. The thoughts, in turn, are mediated by the meaningful signs of inner speech. This is not to say that thinking cannot take place without language, but rather that it is mediated by it and thus develops to a much higher level of sophistication.

Just as the birthday cake as a sign provides much deeper meaning than its physical properties allow, inner speech as a sign provides much deeper meaning than the lower psychological functions would otherwise allow.

Inner speech is not comparable in form to external speech. External speech is the process of turning thought into words. Inner speech is the opposite; it is the conversion of speech into inward thought. Inner speech, for example, contains predicates only. Subjects are superfluous. Words are also used much more economically. One word in inner speech may be so replete, with sense to the individual, that it would take many words to express it in external speech.

Vygotsky was a pioneering psychologist and his major works span six separate volumes, written over roughly 10 years, from Psychology of Art (1925) to Thought and Language [or Thinking and Speech] (1934). His interests in the fields of child development and education were extremely diverse.

His philosophical framework includes insightful interpretations of the cognitive role of mediation tools, as well as the re-interpretation of well-known concepts in psychology such as internalization of of knowledge. His work covered such diverse topics as the origin and the psychology of art, the relation between learning and human development, concept formation, interrelation between language and thought development, play as a psychological phenomenon, learning disabilities, and abnormal human development.

Less known is Vygotsky's research on play, or children's games, as a psychological phenomenon and its role in the child's development. Through play the child develops abstract meaning separate from the objects in the world, which is a critical feature in the development of higher mental functions.

Vygotsky gives the famous example of a child who wants to ride a horse but cannot. If the child were under three, he would perhaps cry and be angry, but around the age of three the child's relationship with the world changes. Henceforth, play is such that the explanation for it must always be that it is the imaginary, illusory realization of unrealizable desires. Imagination is a new formation that is not present in the consciousness of the very raw young child, is totally absent in animals, and represents a specifically human form of conscious activity. Like all functions of consciousness, it originally arises from action.

The child wishes to ride a horse but cannot, so he picks up a stick and stands astride of it, thus pretending he is riding a horse. The stick is a pivot. "Action according to rules begins to be determined by ideas, not by objects.... It is terribly difficult for a child to sever thought (the meaning of a word) from object. Play is a transitional stage in this direction. At that critical moment when a stick – i.e., an object – becomes a pivot for severing the meaning of horse from a real horse, one of the basic psychological structures determining the child's relationship to reality is radically altered".

As children get older, their reliance on pivots such as sticks, dolls, and other toys diminishes. They have internalized these pivots as imagination and abstract concepts through which they can understand the world.

*"The old adage that 'children's play is imagination in action' can be reversed: we can say that imagination in adolescents and schoolchildren is play without action".*

Vygotsky also referred to the development of social rules that form, for example, when children play house and adopt the roles of different family members. Vygotsky cites an example of two sisters playing being sisters. The rules of behavior between them that go unnoticed in daily life are consciously acquired through play.

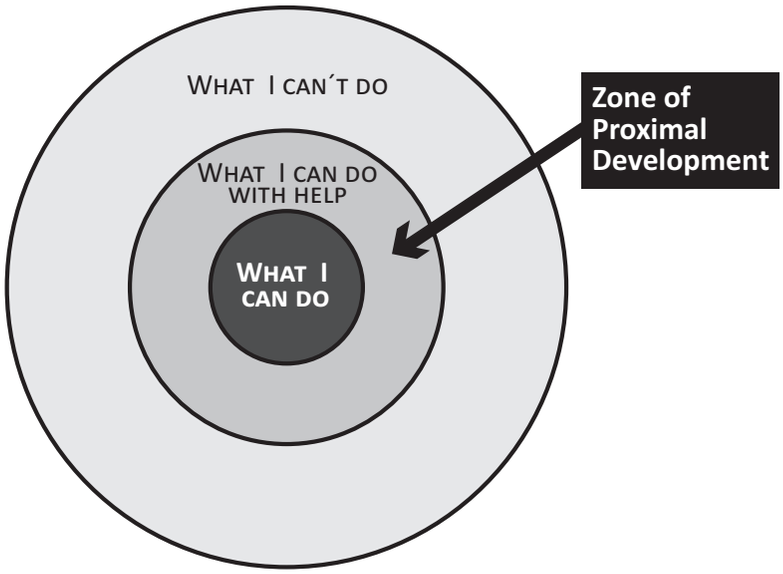
As well as social rules, the child acquires what we now refer to as self-regulation. For example, when a child stands at the starting line of a running race, she may well desire to

run immediately so as to reach the finish line first, but her knowledge of the social rules surrounding the game and her desire to enjoy the game enable her to regulate her initial impulse and wait for the start signal.

**SUMMARY**

The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition.

Vygotsky states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals." .




A second aspect of Vygotsky's theory is the idea that the potential for cognitive development depends upon the "zone of proximal development" (ZPD): a level of development attained when children engage in social behavior.

Full development of the ZPD depends upon full social interaction.

The range of skill that can be developed with adult guidance or peer collaboration exceeds what can be attained alone.

For example, in the learning of language, our first utterances with peers or adults are for the purpose of communication, but once mastered they become internalized and allow "inner speech".

Vygotsky's theory is complementary to Bandura's work on social learning and a key component of Situated Learning Theory, as well. Because Vygotsky's focus was on cognitive development, it is interesting to compare his views with those of a constructivist (Bruner) and with a developmental stage researcher (Piaget).

**b. * BRUNER, Jerome (1915 - ) Discovery Learning**

Bruner was greatly influenced by Piaget's ideas about cognitive development in children. During the 1940's his early work focused on the impact of needs, motivations, and expectations ("mental sets") and their influence on perception. He also looked at the role of strategies in the process of human categorization, and development of human cognition. He presented the point of view that children are active problem-solvers and capable of exploring "difficult subjects". This was widely divergent from the dominant views in education at the time. Only Piaget, Montessori ("Don't underestimate what children can accomplish."), and Bruner were supporting the innate capabilities of children.

Bruner emphasized the role of structure in learning and how it may be made central in teaching. Structure refers to relationships among factual elements and techniques. He believed the intuitive skills were under-emphasized. He investigated motivation for learning. He felt that ideally, interest in the subject matter is the best stimulus for learning. Bruner did not like external competitive goals such as grades or class ranking.

Eventually Bruner was strongly influenced by Vygotsky's writings and began to turn away from the intra-personal focus he had had for learning, and began to adopt a social and political view of learning. Bruner argued that aspects of cognitive performance are facilitated by language. He stressed the importance of the social setting in the acquisition of language. His views are similar to those of Piaget, and promoted since the 1980's by linguist, Stephen Krashen.

Bruner places more emphasis on the social influences on development. The earliest social setting is the mother-child relationship, where children work out the meanings of utterances to which they are repeatedly exposed. He believed there were individual differences and that no standard sequence could be found for all learners. He considered instruction as an effort to assist or shape growth.

In 1996 Bruner published "The Culture of Education". This book reflected his changes in viewpoints since the 1960's. He adopted the point of view that culture shapes the mind and provides the raw material with which we constrict our world and our self-conception.

***Four Key Themes emerged in Bruner's Theory of Discovery Learning:***

**1. Predisposition to learn**

This feature specifically states the experiences which move the learner toward a love of learning in general, or of learning something in particular. Motivational, cultural, and personal factors contribute to this. Bruner emphasized social factors and early teachers and parents' influence on this. He believed learning and problem solving emerged out of exploration. Part of the task of a teacher is to maintain and direct a child's spontaneous explorations.


**2. Structure of knowledge**

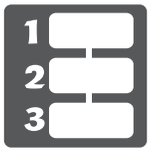
It is possible to structure knowledge in a way that enables the learner to most readily grasp the information. This is a relative feature, as there are many ways to structure a body of knowledge, and many preferences among learners.

Understanding the fundamental structure of a subject makes it more comprehensible. Bruner viewed categorization as a fundamental process in the structuring of knowledge. Details are better retained when placed within the contest of an ordered and structured pattern. Fundamental principles or patterns are best suited to generate knowledge, which is transferable to other contexts.

The discrepancy between beginning and advanced knowledge in a subject area is diminished when instruction centers on a structure and principles of orientation. This means that a body of knowledge must be in a simple enough form for the learner to understand it, and it must be in a form recognizable to the student's experience.

**3. Modes of representation**

Visual, words, symbols, graphic organizers, mind maps (Buzan), videos, posters, etc.




**4. Effective sequencing**

No one sequencing plan will fit every learner, but in general, increasing difficulty is a logical way to organize. Sequencing, or lack of it, can make learning easier or more difficult.

Using Categorization:

Bruner gave much attention to categorization of information in the construction of internal cognitive maps. He believed that perception, conceptualization, learning, decision-making, and making inferences all involved categorization.

Bruner suggested a system of coding in which people form a hierarchical arrangement of related categories. Each successively higher level of categories becomes more specific, echoing Benjamin Bloom's understanding of knowledge acquisition as well as the related idea of instructional scaffolding (Bloom's Taxonomy).

Categories are "rules" that specify four things about objects.

**A. Critical attributes (characteristics)**
Required characteristics for inclusion of an object in a category. (Example, for an object to be included in the category "car" it must have an engine, 4 wheels, and be a possible means of transportation.)


**B. The second rule prescribes how the critical attributes are combined.**

**C. The third rule assigns weight to various properties.**
Example, it could be a car even if a tire was missing, and if it was used for hauling cargo it would be shifted to a different category of "truck" or perhaps "van".

**D. The fourth rule sets acceptance limits on attributes.**
Some attributes can vary widely, such as color. Others are fixed. For example a vehicle without an engine is not a car. Likewise, a vehicle with only two wheels would not be included in "car".
Bruner's theories introduced the idea that people interpret the world largely in terms of similarities and differences. This is a significant contribution to how individuals construct their unique models of the world.

**Application of Discovery Learning**
Bruner emphasized four characteristics of effective instruction which emerged from his theoretical constructs.

***1. Personalized:***
Instruction should relate to learners' predisposition, and facilitate interest toward learning.
***2. Content Structure:***
Content should be structured so it can be most easily grasped by the learner.
***3. Sequencing:***
Sequencing is an important aspect for presentation of material.
***4. Reinforcement:***
Rewards and consequences should be selected and paced appropriately.
They can be "virtual", or points, or intrinsic, not, necessarily tangible.

**Intellectual Development**

Bruner postulated three stages of intellectual development.

***1. "Enactive"***

when a person learns about the world through actions on physical objects and the outcomes of these actions.

***2. "Iconic"***

where learning can be obtained through using models and pictures.

***3. "Symbolic"***

in which the learner develops the capacity to think in abstract terms.

Based on this three-stage notion, Bruner recommended using a combination of concrete, pictorial then symbolic activities. This combination will lead to more effective learning.

**c. COLLINS, Allen et al (1989) Cognitive Apprenticeship**

Cognitive apprenticeship is a theory of the process where a master of a skill teaches that skill to an apprentice.

Constructivist approaches to human learning have led to the development of a theory of cognitive apprenticeship. This theory holds that masters of a skill often fail to take into account the implicit processes involved in carrying out complex skills when they are teaching novices.

To combat these tendencies, cognitive apprenticeships "…are designed, among other things, to bring these tacit processes into the open, where students can observe, enact, and practice them with help from the teacher…".

This model is supported by Albert Bandura's (1997) Theory of Modeling, which posits that in order for modeling to be successful, the learner must be attentive, must have access to and retain the information presented, must be motivated to learn, and must be able to accurately reproduce the desired skill.

In ancient times, teaching and learning were accomplished through apprenticeship: We taught our children how to speak, grow crops, craft cabinets, or tailor clothes by showing them how and by helping them do it. Apprenticeship was the vehicle for transmitting the knowledge required for expert practice in fields from painting and sculpting to medicine, law, and teaching. It was the natural way to learn.

In modern times, apprenticeship has largely been replaced by formal schooling, except in children's learning of language, in some aspects of graduate education, and in on-the-job training.

An alternative model of instruction that is accessible within the framework of the typical classroom is a model of instruction that goes back to apprenticeship but incorporates elements of schooling. This model is "cognitive apprenticeship" (Collins, Brown, and Newman, 1989).

In apprenticeship, learners can see the processes of work: They watch a parent sow, plant and harvest crops and help as they are able; they assist a tradesman as he crafts a cabinet; they piece together garments under the supervision of a more experienced tailor. Apprenticeship involves learning a physical, tangible activity. But in schooling, the "practice" of problem solving, reading comprehension, and writing is not at all obvious — it is not necessarily observable to the student.

In apprenticeship, the processes of thinking are visible. In schooling, however, the processes of thinking are often invisible to both the students and the teacher. Cognitive apprenticeship is a model of instruction that works to make thinking visible.

Conceptual and problem-solving knowledge acquired in school remains largely inert for many students. In some cases, knowledge remains bound to features of problems as they appear in textbooks and class presentations.

For example, Schoenfeld (I985) has found that, in solving mathematics problems, students rely on their knowledge of standard textbook patterns of problem presentation rather than on their knowledge of problem-solving strategies or intrinsic properties of the problems themselves. When they encounter problems that fall outside these patterns, students are often at a loss for what to do.

In other cases, students fail to use resources available to them to improve their skills because they lack models of how to tap into those resources. For example, students are unable to make use of potential models of good writing acquired through reading because they have no understanding of how the authors produced such text. They are unaware that expert writing involves organizing one's ideas about a topic, elaborating goals to be achieved in the writing, thinking about what the audience is likely to know or believe about the subject, and so on.

To make real differences in students' skill, we need to understand the nature of expert practice and to devise methods that are appropriate to learning that practice. To do this, we must first recognize that cognitive strategies are central to integrating skills and knowledge in order to accomplish meaningful tasks. They are the organizing principles of expertise, particularly in such domains as reading, writing, and mathematics.

In ***modeling***, the apprentice observes the master demonstrating how to do different parts of the task. The master makes the target processes visible, often by explicitly showing the apprentice what to do. But in traditional apprenticeship, much of the learning occurs as apprentices watch others at work.

***Scaffolding*** is the support the master gives apprentices in carrying out a task. This can range from doing almost the entire task for them to giving occasional hints as to what to do next.
Fading is the notion of slowly removing the support, giving the apprentice more and more responsibility.

***Coaching*** is the thread running through the entire apprenticeship experience. The master coaches the apprentice through a wide range of activities: choosing tasks, providing hints and scaffolding, evaluating the activities of apprentices and diagnosing the kinds of problems they are having, challenging them and offering encouragement, giving feedback, structuring the ways to do things, working on particular weaknesses. In short, coaching is the process of overseeing the student's learning.
The interplay among observation, scaffolding, and increasingly independent practice aids apprentices both in developing self-monitoring and correction skills and in integrating the skills and conceptual knowledge needed to advance toward expertise.
Observation of the teacher by the students plays a surprisingly key role. Lave (1988) hypothesizes that it aids learners in developing a conceptual model of the target task prior to attempting to execute it.
Giving students a conceptual model — a picture of the whole — is an important factor in apprenticeship's success in teaching complex skills without resorting to lengthy practice of isolated sub-skills.

There are three related reasons for providing the students with a picture of the whole, or "the big idea", as Dr. David Perkins said in a speech Oct. 4, 2013 at Colegio Tagus in Toledo, Spain.

1. It provides learners with an advanced organizer for their initial attempts to execute a complex skill, thus allowing them to concentrate more of their attention on execution than would otherwise be possible.

2. A conceptual model provides an interpretive structure for making sense of the feedback, hints, and corrections from the master during interactive coaching sessions.

3. It provides an internalized guide for the period when the apprentice is engaged in relatively independent practice.

Cognitive Apprenticeship makes thinking visible, and its advocates support that every teacher, serious about student success and intellectual independence, should use its concepts as part of their teaching repertoire.

**d. LAVE, Jean and WENGER, Etienne (1991)**
**Communities of Practice**

A community of practice (CoP) is, according to cognitive anthropologists, Jean Lave and Etienne Wenger, a group of people who share a craft and/or a profession. The group can evolve naturally because of the members' common interest in a particular domain or area, or it can be created specifically with the goal of gaining knowledge related to their field.
It's through the process of sharing information and experiences with the group that the members learn from each other, and have an opportunity to develop themselves personally and professionally (Lave & Wenger 1991). CoPs can exist online, such as within discussion boards, newsgroups, even some blogs, or in real life, such as in a lunch room at work, in a field setting, on a factory floor, or elsewhere in the environment.
Communities of practice are not new phenomena. This type of learning practice has existed for as long as people have been learning and sharing their experiences through storytelling.
Jean Lave and Etienne Wenger coined the phrase in their 1991 book, 'Situated learning' (Lave & Wenger 1991), and Wenger then significantly expanded on the concept in his 1998 book, 'Communities of Practice' (Wenger 1998).
For Wenger, learning is central to human identity. A primary focus of Wenger's more recent work is on learning as social participation – the individual as an active participant in the practices of social communities, and in the construction of his/her identity through these communities (Wenger et. al 2002).
In this context, a community of practice is a group of individuals participating in communal activity, and experiencing/continuously creating their shared identity through engaging in and contributing to the practices of their communities.

***The characteristics of a community of practice include:*** (Wenger et. al & 2002 pp. 27 - 29)

**Domain**
A domain of knowledge creates common ground, inspires members to participate, guides their learning, and gives meaning to their actions.

**Community**
The notion of a community creates the social fabric for that learning. A strong community fosters interactions and encourages a willingness to share ideas.

**Practice**
While the domain provides the general area of interest for the community, the practice is the specific focus around which the community develops, shares, and maintains its core of knowledge.
In many organizations, communities of practice have become an integral part of the organization

structure (McDermott & Archibald 2010). These communities take on knowledge, stewarding tasks that were formerly covered by more formal organizational structures.
In some organizations there are both formal and informal communities of practice. There is a great deal of interest within organizations to encourage, support, and sponsor communities of practice in order to benefit from shared knowledge that may lead to higher productivity (Wenger 2004).
Communities of practice are now viewed by many in the business setting as a means to capturing the tacit knowledge, or the know-how that is not so easily articulated. An important aspect and function of communities of practice is increasing organization performance.

**Four areas of organizational performance that can be affected by communities of practice include:**

» Decreasing the learning curve of new employees

» Responding more rapidly to customer needs and inquiries

» Reducing rework and preventing "reinvention of the wheel"

» Spawning new ideas for products and services

The communities Lave and Wenger studied were naturally forming as practitioners of craft and skill-based activities met to share experiences and insights. They observed situated learning within a community of practice among Yucatán midwives, native tailors, navy quartermasters and meat cutters (Lave & Wenger 1991) as well as insurance claims processors. (Wenger 1998).
Other fields have made use of the concept of CoPs. Examples include education (Grossman 2001), sociolinguistics, material anthropology, second language acquisition, (Kimble, Hildreth & Bourdon 2008), and child mental health practice (AMBIT).
A famous example of a community of practice within an organization is that which developed around the Xerox customer service representatives who repaired the machines in the field (Brown & Duguid 2000). The Xerox representatives began exchanging tips and tricks over informal meetings over breakfast or lunch and eventually Xerox saw the value of these interactions and created the Eureka project to allow these interactions to be shared across the global network of representatives. The Eureka database has been estimated to have saved the corporation $100 million U.S. dollars.

**e. LAVE, Jean (1991) Situated Learning**

Situated learning was first proposed by Jean Lave and Etienne Wenger as a model of learning in a Community of Practice. At its simplest form, situated learning is learning that takes place in the same context in which it is applied.
Lave argues that learning should not be viewed as simply the transmission of abstract and de-contextualized knowledge from one individual to another, but a social process, whereby knowledge is co-constructed. They suggest that such learning is situated in a specific context and embedded within a particular social and physical environment.
Lave and Wenger assert that situated learning "is not an educational form, nor a pedagogical a

strategy". However, since their writing, others have advocated different pedagogies that include situated activity:

» Workshops, kitchens, greenhouses, and gardens used as classrooms
» Stand-up role-playing, in the real world setting, including most military training, (much of which, though, takes a behaviorist approach)
» Field trips, including archaeological digs, and participant-observer studies in a foreign culture
» On the job training including apprenticeship and cooperative learning activities.
» Sports practice, music, practice, and art are situated learning by definition, as the exact actions in the real setting are those of practice – with the same equipment or instruments.

**Situated Learning begins with people trying to solve problems.**

When learning is problem-based, people explore real life situations to find answers, or to solve the problems.

Being social is very important to learning. In believing that learning is social, learners who gravitate to communities with shared interests tend to benefit from the knowledge of those who are more knowledgeable than they are. These social experiences provide people with authentic experiences.

When students are in these real-life situations, they are compelled to learn. Taking a problem-based learning approach to designing curriculum carries students to a higher level of thinking.

The pedagogy of the lifelong-learning era is evolving toward reliance on interaction. Sometimes this involves interacting with a rich technological environment such as a computer tutor or a game or app on the web, and sometimes with other people by means of a computer network.

The pedagogy of computer tutors echoes the apprenticeship model in setting individualized tasks for learners and offering guidance and feedback as they work.


Situated learning is becoming more involved with technology in ways to help individuals learn information differently than they have in the past. The model of learning a skill through technology mimics how individuals learned in the past from a professional in that skill. In the past when individuals learned about a particular topic it was done in person, in a hands-on environment.

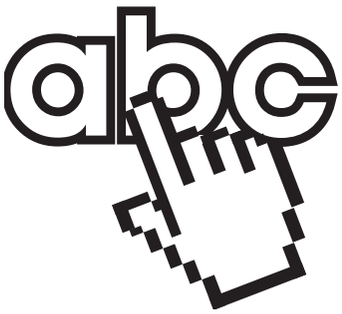
Technology now makes it possible to do these same things using a computer or any other digital device. Interaction through

the computer between individuals is one more way to make situated learning more successful as well as give students an opportunity to have another venue through which to learn.

In fact, an understanding of video games as learning environments is becoming increasingly important as gaming culture rivals schooling for the attention of children and adolescents across the world.

James Paul Gee argues that " The compelling nature of video game participation is in part due to the underlying social, cognitive, and developmental learning principles around which successful games are built. With this perspective, games and gaming can be a source for inspiration in building more effective learning environments."

Allowing students to have the opportunity to participate, interact and inject their own ideas is a way to obviously grow and make informed decisions. Gee has proven this with the use of video games. It enables the learner to build their social and communication skills as well as develop their cognition abilities. Computer-based learning software, such as SimCity or Pulitzer Focus Games, have permitted users to utilize situated learning by allowing them to run their own city.




International competition programs, such as SUN (Simulated United Nations), require students to make informed decisions, which will either deteriorate their people or help them thrive. As stated, more effective learning environments are built this way.

Students process information by visualizing, hearing, reasoning and reflecting so they tend to learn more easily by having models to go by or imitate. In some study cases, teachers have gone as far as to make the classroom environment as homey as possible, whether it is a computerized set up or a physical set up. It gives the students the look and feel of being at home in a comfortable setting which allows them to feel and learn freely. It has been proven to have a great impact on the students learning abilities. This is another innovative way of utilizing situated learning.

When today's students enter their post-education professional lives, odds are pretty good that they will be asked to work with others from around the globe, collaboratively, to create content for diverse and wide-ranging audiences. Odds are also pretty good that they are going to need to read and write effectively in linked environments as they locate, analyze, remix, and share the best, most relevant content online for their own learning.

Situated learning allows students to gain experience through doing, and from this experience they are able to be productive in their lives after they have graduated. Learning occurs among peers who perform the same function. Problem-solving and the generation of new ideas can be better supported in a social learning environment where all of the stakeholders experience the positive effects of ongoing learning.

***People learn by simply being in certain situations with others.***

Social interaction is an important part of the learning process. As technology has grown and become an integral part of the lives of children, teens and young adults, older adults have been forced to adapt.

As lifelong learners dealing with real-life problems, a project-based approach is what develops when learners come together at brick and mortar learning centers, schools, universities, or in social networking communities on the web.

***These are examples of Situated Learning.***

Problem-Based Learning

(Strong since the 1990's into the 21st Century)

Problem-based learning (PBL) is a student-centered method in which students learn about a subject through the experience of problem solving. Students learn both thinking strategies and domain knowledge. The PBL format originated from the medical school of thought, and is now used in other schools of thought too.

The goals of PBL are to help the students develop flexible knowledge, effective problem solving skills, self-directed learning, effective collaboration skills and intrinsic motivation. Problem-based learning is a style of active learning.

Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem. The role of the instructor (known as the tutor in PBL) is to facilitate learning by supporting, guiding, and monitoring the learning process. The tutor must build students' confidence to take on the problem, and encourage the students, while also stretching their understanding. PBL represents a paradigm shift from traditional teaching and learning philosophy, which is more often textbook and lecture-based.

The constructs for teaching PBL are very different from traditional classroom/lecture teaching.

***Barrows defines the Problem-Based Learning Model as:***

» 1. Student Centered Learning

» 2. Learning is done in small student groups, ideally 6-10 people.

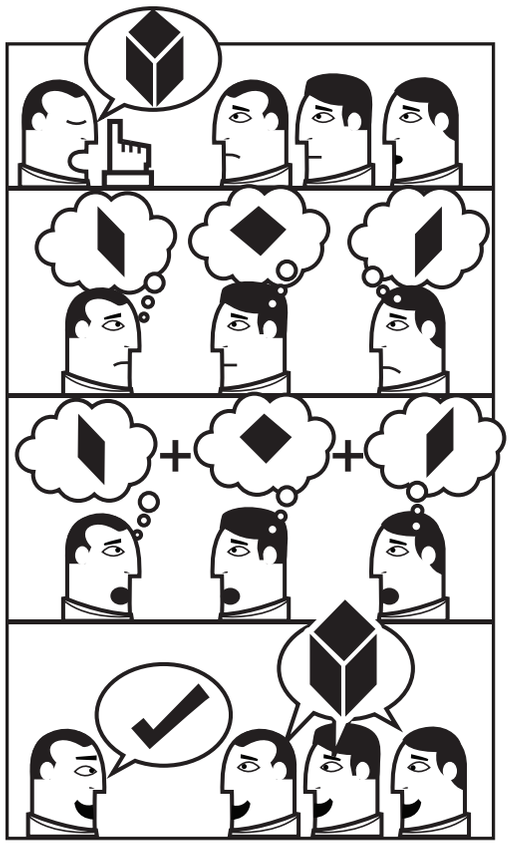
» 3. Facilitators or tutors guide the students rather than "teach".

» 4. A Problem forms the basis for the organized focus of the group, and stimulates learning.

» 5. The problem is a vehicle for the development of problem solving skills. It stimulates the cognitive process.

» 6. New knowledge is obtained through Self-Directed Learning (SDL).

Problem Based Learning addresses the need to promote lifelong learning through the process of inquiry and constructivist learning.
PBL can be considered a constructivist approach to instruction, emphasizing collaborative and self-directed learning and being supported by flexible teacher scaffolding.
Yew and Schmidt, and Schmidt, and Hung elaborate on the cognitive constructivist process of PBL



1. Learners are presented with a problem and through discussion within their group, activate their prior knowledge.

2. Within their group, they develop possible theories or hypotheses to explain the problem. Together they identify learning issues to be researched. They construct a shared primary model to explain the problem at hand. Facilitators provide scaffold, which is a framework on which students can construct knowledge relating to the problem.

3. After the initial teamwork, students work independently in self directed study to research the identified issues.

4. The students re-group to discuss their findings and refine their initial explanations based on what they have learned.

PBL follows a constructivist perspective in learning as the role of the instructor is to guide and challenge the learning process rather than strictly providing knowledge. From this perspective, feedback and reflection on the learning process and group dynamics are essential components of PBL.
Students are considered to be active agents who engage in social knowledge construction. PBL assists in processes of creating meaning and building personal interpretations of the world based on experiences and interactions. PBL assists to guide the student from theory to practice during their journey through solving the problem.

**Supporting Evidence**
Several studies support the success of the constructivist problem-based and inquiry learning methods. One example is a study on a project called GenScope, an inquiry-based science software application, which found that students using the GenScope software showed significant gains over the control groups, with the largest gains shown in students from basic courses.
One large study tracked middle school students' performance on high-stakes standardized tests to evaluate the effectiveness of inquiry-based science. The study found a 14 percent improvement

for the first cohort of students and a 13 percent improvement for the second cohort. The study also found that inquiry-based teaching methods greatly reduced the achievement gap for African-American and Hispanic students in the USA.
.A systematic review of the effects of problem-based learning in medical school on the performance of doctors after graduation showed clear positive effects on physician competence. This effect was especially strong for social and cognitive competencies such as coping with uncertainty and communication skills.

**Demands of Implementing Project-Based Learning**
Implementing PBL in schools and universities is a demanding process that requires resources, a lot of planning and organization. Sammy Azer (2011) discusses the 12 steps for implementing the "pure PBL"

- 1. Prepare faculty for change
- 2. Establish a new curriculum committee and working group
- 3. Designing the new PBL curriculum and defining educational outcomes
- 4. Seeking advice from experts in PBL
- 5. Planning, organizing and managing
- 6. Training PBL facilitators and defining the objectives of a facilitator
- 7. Introducing students to the PBL program
- 8. Using E-learning to support the delivery of the PBL program
- 9. Changing the assessment to suit the PBL curriculum
- 10. Encouraging feedback from students and teaching staff
- 11. Managing learning resources and facilities that support self directed learning
- 12. Continuing, on-going evaluation and adjusting changes

Guiding students' learning entails much more time than simply giving students the answers. Facilitator-student contact time was 3-4 times greater than instructors in traditional methods.
One of the aims of PBL is the development of self-directed learning (SDL) skills. SDL is defined as "a process in which individuals take the initiative…in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes."

SUMMARY OF PROJECT-BASED LEARNING
In PBL, students learn how to analyze a problem, identify relevant facts and generate hypotheses, identify necessary information/knowledge for solving the problem and make reasonable judgments about solving the problem. PBL curriculum includes building knowledge, building written and interpersonal interactions and through the experience of the problem solving process.

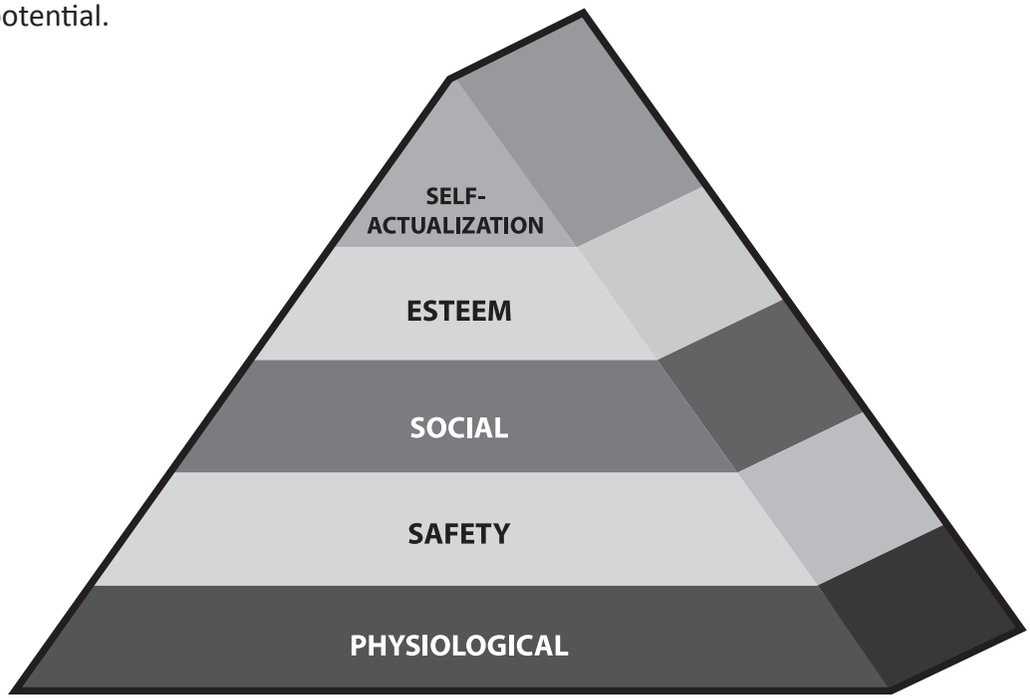
## 4. Motivational and Humanistic

**a. * MASLOW, Abraham (1943) Maslow's Hierarchy of Human Needs**

Do you get sick of the succession of students falling over themselves to obtain a career in 'The City'? Even the credibility-destroying events that led to the worst recession in decades don't seem to have deterred the lemming charge of undergraduates towards this particular high cliff. And when you ask them why they are interested in this type of career, there is one word which falls from their lips with depressing predictability — "Money".

Are these young people hopelessly materialistic? Is their only notion of value linked to the size of their potential bonus? If you look at the materialistic people of this world you might say, yes. But are some people only greedy because they are stuck at a more rudimentary stage of psychological development?

In 1943 Abraham Maslow put forward his theory that human needs develop in a particular order. In his Hierarchy of Needs, Maslow suggested that people first need to satisfy their basic physiological needs — food, shelter, sleep, sex, etc. Once these requirements have been secured then safety needs (protection, physical security, resources, job security, income, etc.) rise to the surface. Next come social needs such as relationships, family, intimacy, belonging, etc. After that, needs relating to esteem (achievement, respect, status, etc.) become more prominent. Finally, a desire for self-actualization leads us to pursue personal growth, authenticity and individual meaning, reaching their potential.




***How far have you ascended?***

**b. * ROGERS, Carl (Major work 1950's - 1970's)**

Through non-directive therapy; student-centered education; using open- ended questions, Carl Rogers was an influential American psychologist, and among the founders of the humanistic approach, (or client-centered approach). Rogers is widely considered to be one of the founding fathers of psychotherapy research .

The person-centered approach, his own unique approach to understanding personality and human relationships, found wide application in various domains such as psychotherapy and counseling , education, (student-centered learning), organizations, and other group settings.

For his professional work he was bestowed the Award for Distinguished Professional Contributions to Psychology by the APA in 1972. Towards the end of his life Carl Rogers was nominated for the Nobel Peace Prize for his work with national intergroup conflict in South Africa and Northern Ireland.

In a study by Haggbloom et al. (2002) using six criteria such as citations and recognition, Rogers was found to be the sixth most eminent psychologist of the 20th century and second, among clinicians, only to Sigmund Freud.

Rogers' theory of the self is considered to be humanistic. His theory is based directly on the "phenomenal field" personality theory of Combs and Snygg (1949).

Rogers guided his patients and students, through his personally-developed patient/student-centered education, to be a "fully functioning person".

Optimal development, which Rogers describes as the good life, occurs when the person continually aims to fulfill its full potential.

***He listed the characteristics of a fully functioning person: (Rogers, 1961)***

**A growing openness to experience-** They move away from defensiveness and have no need for "sub-ception" (a perceptual defense that involves unconsciously applying strategies to prevent a troubling stimulus from entering consciousness).

**An increasingly existential lifestyle** – Living each moment fully – not distorting the moment to fit personality or self-concept but allowing personality and self-concept to emanate from the experience. This results in excitement, daringness, adaptability, tolerance, spontaneity, and a lack of rigidity and suggests a foundation of trust. "To open one's spirit to what is going on now, and discover in that present process whatever structure it appears to have".
(Rogers, 1961)

**Increasing trust –** They trust their own judgment and their ability to choose behavior that is appropriate for each moment. They do not rely on existing codes and social norms but trust that as they are open to experiences, they will be able to trust their own sense of right and wrong.

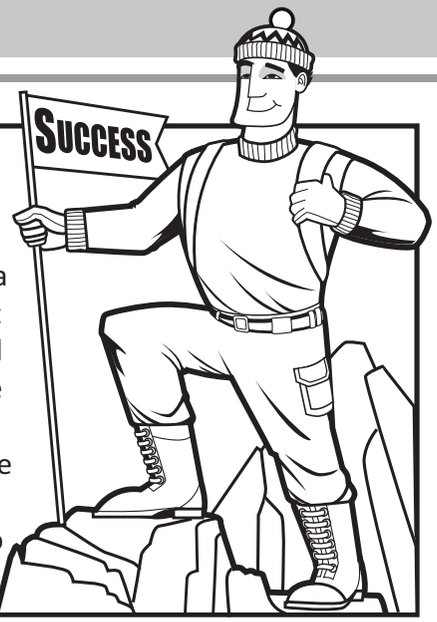
**Freedom of choice –** Not being shackled by the restrictions that influence an incongruent individual, they are able to make a wider range of choices more fluently. They believe that they play a role in determining their own behavior and so feel responsible for their own behavior.

**Creativity –** It follows that they will feel more free to be creative. They will also be more creative in the way they adapt to their own circumstances without feeling a need to conform.

**Reliability and constructiveness –** They can be trusted to act constructively. An individual who is open to all their needs will be able to maintain a balance between them. Even aggressive needs will be matched and balanced by intrinsic goodness in congruent individuals.

***Rogers' description of the Good Life:***

"This process of the good life is not, I am convinced, a life for the faint-hearted. It involves the stretching and growing of becoming more and more of one's potentialities. It involves the courage to be. It means launching oneself fully into the stream of life."




**A rich full life –** Rogers describes the life of the fully functioning individual as rich, full and exciting, and suggests that they experience joy and pain, love and heartbreak, fear and courage more intensely.

**Learner-centered teaching**

The application to education has a large robust research tradition similar to that of therapy with studies having begun in the late 1930s and continuing today. (Cornelius-White, 2007).

Rogers described the approach to education in Client-Centered Therapy and in 1969 wrote "Freedom to Learn" devoted exclusively to Learner-Centered Teaching and Learning.

The new Learner-Centered Model is similar to the person-centered approach to education. Rogers and Harold Lyon began a book prior to Rogers death, entitled: "On Becoming an Effective Teacher -- Person-centered Teaching, Psychology, Philosophy, and Dialogues with Carl R. Rogers and Harold Lyon", which was completed by Lyon and Reinhard Tausch, and published in 2013, containing Rogers last unpublished writings on student-centered teaching.

***Rogers had the following five hypotheses regarding learner-centered education:***

***1. "A person cannot teach another person directly; a person can only facilitate another's learning".***

This is a result of his personality theory, which states that everyone exists in a constantly changing world of experience in which he or she is the center. Each person responds based on perception and experience. The belief is that what the student does is more important than what the teacher does. The focus is on the student. Therefore, the background and experiences of the learner are essential to how and what is learned.

Each student will process what he or she learns differently depending on what he or she brings to the classroom.

***2. "A person learns significantly only those things that are perceived as being involved in the maintenance of or enhancement of the structure of self".***
Therefore, relevancy to the student is essential for learning. The students' experiences become the core of the course.

***3. "Experience which, if assimilated, would involve a change in the organization of self, tends to be resisted through denial or distortion of symbolism".***
If the content or presentation of a course is inconsistent with preconceived information, the student will learn if he or she is open to varying concepts. Being open to consider concepts that vary from one's own is vital to learning. Therefore, gently encouraging open-mindedness is helpful in engaging the student in learning. Also, it is important, for this reason, that new information be relevant and related to existing experiences.

***4. "The structure and organization of self appears to become more rigid under threats, and to relax its boundaries when completely free from threat".***
If students believe that concepts are being forced upon them, they might become uncomfortable and fearful. A barrier is created by a tone of threat in the classroom. Therefore, an open, friendly environment in which trust is developed is essential in the classroom.
Fear of retribution for not agreeing with a concept should be eliminated.
A classroom tone of support helps to alleviate fears and encourages students to have the courage to explore concepts and beliefs that vary from those they bring to the classroom.
Also, new information might threaten the student's concept of him- or herself; therefore, the less vulnerable the student feels, the more likely he or she will be able to open up to the learning process.

***5. "The educational situation, which most effectively promotes significant learning, is one in which:***
(a) Threat to the self of the learner is reduced to a minimum;
(b) Differentiated perception of the field is facilitated".

The instructor should be open to learning from the students and also working to connect the students to the subject matter. Frequent interaction with the students will help achieve this goal. The instructor's acceptance of being a mentor who guides rather than the expert who tells is instrumental to student-centered, nonthreatening, and unforced learning.
Rogers supported asking open-ended questions, those with a variety of correct answers, or asking for opinions or ideas, (that are not "right" or "wrong"), result in more active student participation and more profound learning.

EXAMPLES:
Instead of asking, "What's the longest river in South America?", or "What is the largest ocean?", or "What is 9 x 4"? all of which are "closed questions" ,because they have only one correct answer, ask questions such as:

» Why do you think people are cutting down the rain forests?
» What ways could the owner of the logging business increase his profit? How can he decrease his costs?
» What are various ways to state the number "36"?
» What person do you think could be chosen as a "Leading Figure of the Twentieth Century"... and.... why?

These open-ended questions get more students to think, and they exhibit part of Carl Rogers' theory of STUDENT-CENTERED LEARNING.

**c. DECI, Edward L. and RYAN, Richard M. (1975) Self-Determination Theory (SDT)**

Self-determination theory (SDT) is a theory of human motivation and personality, concerning people's inherent growth tendencies and their innate psychological needs.

It is concerned with the motivation behind the choices that people make without any external influence. SDT focuses on the degree to which an individual's behavior is self-motivated and self-determined.

In the 1970s, research on SDT evolved from studies comparing the intrinsic and extrinsic motives, and from growing understanding of the dominant role intrinsic motivation played in an individual's behavior.

It was not until mid-1980s that SDT was formally introduced and accepted as a sound empirical theory. Research applying SDT to different areas in social psychology has increased considerably since the 2000's.

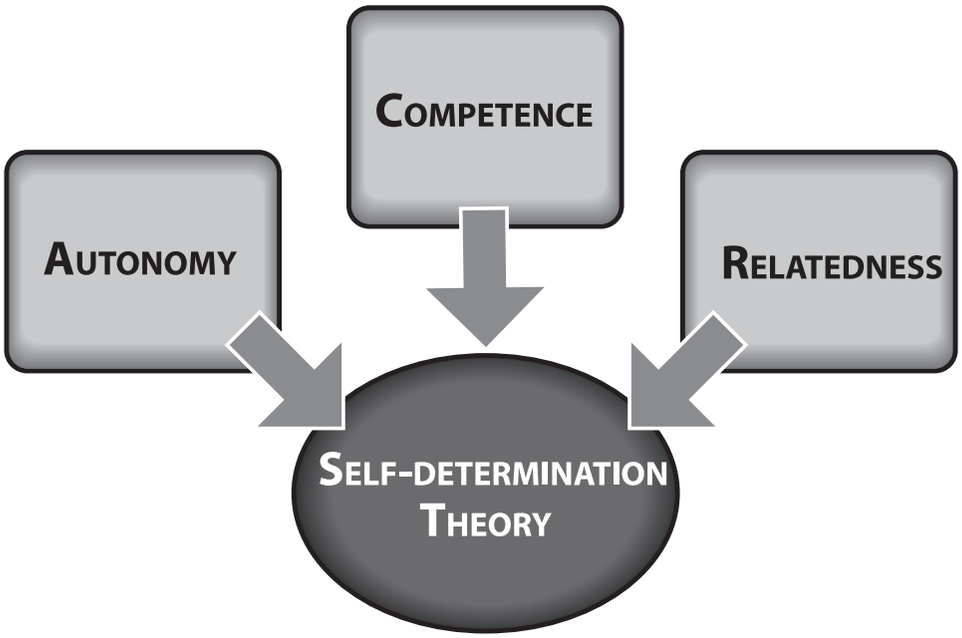
Key studies that led to emergence of SDT included research on intrinsic motivation. Intrinsic motivation refers to initiating an activity for its own sake, because it is interesting and satisfying in itself, as opposed to doing an activity to obtain an external goal (extrinsic motivation).

Different types of motivations have been described based on the degree they have been internalized. Internalization refers to the active attempt to transform an extrinsic motive into personally endorsed values and thus assimilate behavioral regulations that were originally external.

Edward Deci and Richard Ryan later expanded on the early work, differentiating between intrinsic and extrinsic motivation and proposed three main intrinsic needs involved in self-determination.

SDT is centered on the belief that human nature shows persistent positive features, that it repeatedly shows effort, agency and commitment in their lives that the theory calls "inherent growth tendencies." People also have innate psychological needs that are the basis for self-motivation and personality integration.

According to Deci and Ryan, the three psychological needs motivate the self to initiate behavior and specify nutriments that are essential for psychological health and well-being of an individual. These needs are said to be universal, innate, and psychological.




Deci and Ryan write that SDT identifies three innate needs that, if satisfied, allow optimal function and growth:

***Competence***
***Relatedness***
***Autonomy***

These needs are seen as universal necessities that are innate, not learned, and seen in humanity across time, gender, and culture.

***Deci claims that there are three essential elements of the theory:***

» Humans are inherently proactive with their potential and mastering their inner forces (such as drives and emotions).
» Humans have inherent tendency toward growth development and integrated functioning.
» Optimal development and actions are inherent in humans, but they don't happen automatically.

To actualize their inherent potential they need nurturing from the social environment. If this happens there are positive consequences (e.g. well being and growth) but if not, there are negative consequences. So SDT emphasizes humans' natural growth toward positive motivation, however this is thwarted if their basic needs are not fulfilled.

**Needs**

SDT supports three basic psychological needs that must be satisfied to foster well-being and health; these needs can be universally applied. However, some will be expressed differently based on time, culture, or experience.

**1. Competence**

Seek to control the outcome and experience mastery

**2. Relatedness**

Is the universal want to interact, be connected to, and experience caring for others

**3. Autonomy**

Is the universal urge to be causal agents of one's own life and act in harmony with one's integrated self; Deci notes this does not mean to be independent of other people.

**d. KOLB, David A. (1975) Experiential Learning**

David A. Kolb (with Roger Fry) created his famous model of Experiential Learning out of four elements of learning:

- » Concrete experience
- » Observation and reflection
- » The formation of abstract concepts
- » Testing in new situations

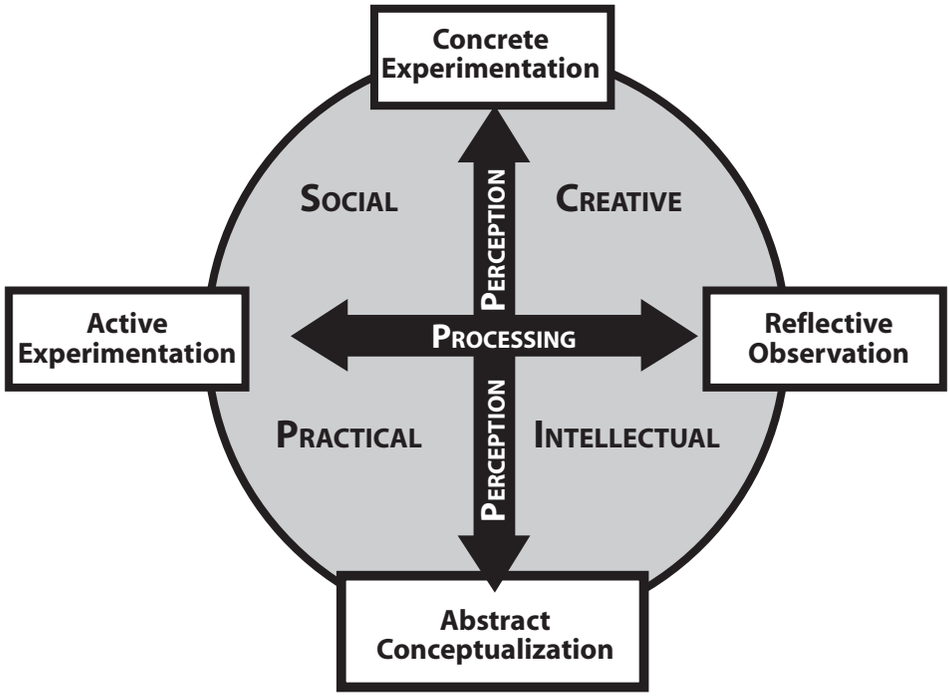
He represented these in the famous experiential learning chart, which you can find at the end of this section.

Kolb joins these with John Dewey to emphasize the developmental nature of the lesson, and with Piaget for an appreciation of cognitive development. He named his model so as to emphasize the link with Dewey, Lewin and Piaget, and to stress the role that experience plays in learning. He wished to distinguish it from cognitive theories of the learning process.

David Kolb and Roger Fry (1975) argue that effective learning entails the possession of four different abilities (as indicated on each pole of their model): concrete experience abilities, reflective observation abilities, abstract conceptualization abilities, and active experimentation abilities.

As a result they developed a learning style inventory (Kolb 1976) which was designed to place people on a line between concrete experience and abstract conceptualization; and active experimentation and reflective observation. Using this, Kolb and Fry proceeded to identify four basic learning styles.

## Kolb´s Experiential Learning Theory




**UNDERSTANDING THE CHART**

- (1) Concrete experience followed by
- (2) Observation and experience followed by
- (3) Forming abstract concepts followed by
- (4) Testing in new situations (after Kurt Lewin)

Kolb and Fry (1975) argue that the learning cycle can begin at any one of the four points – and that it should really be approached as a continuous spiral.

**e. KELLER, John (1983) Model of Motivational Design**

***ARCS: Attention, Relevance, Confidence, Satisfaction***

According to John Keller's ARCS Model of Motivational Design, there are four steps for promoting and sustaining motivation in the learning process:

- Attention
- Relevance
- Confidence
- Satisfaction

Originator: John Keller

**1. ATTENTION**

Attention can be gained in two ways:

(a) Perceptual arousal – uses surprise or uncertainty to gain interest. Uses novel, surprising, incongruous, and uncertain events;

(b) Inquiry arousal – stimulates curiosity by posing challenging questions or problems to be solved.

Methods for grabbing the learners' attention include:

**Active participation -**Adopt strategies such as games, role play or other hands-on methods to get learners involved with the material or subject matter.

**Use individual cards with a student's name on each one.** Shuffle them periodically, and use them to call on students at random. Ask the question BEFORE you say the student's name. This helps to build active participation. (Gallagher, 1985)

**Variability –** To better reinforce materials and account for individual differences in learning styles, use a variety of methods in presenting material (e.g. use of videos, short lectures, mini-discussion groups).

**Humor -**Maintain interest by using a small amount of humor (but not too much to be distracting),

**Incongruity and Conflict –** A devil's advocate approach in which statements are posed that go against a learner's past experiences.

**Specific examples –** Use a visual stimuli, story, or biography.

**Inquiry –** Pose questions or problems for the learners to solve, e.g. brainstorming activities.

**2. RELEVANCE**

Establish relevance in order to increase a learner's motivation. To do this, use concrete language and examples with which the learners are familiar.

***Six major strategies described by Keller include:***

» (a) Experience – Tell the learners how the new learning will use their existing skills. We best learn by building upon our present knowledge or skills.

» (b) Present Worth – What will the subject matter do for me today?

» (c) Future Usefulness – What will the subject matter do for me tomorrow?

» (d) Needs Matching – Take advantage of the dynamics of achievement, risk taking, power, and affiliation.

» (e) Modeling – First of all, "be what you want them to do!" Other strategies include guest speakers, videos, and having the learners who finish their work first to serve as tutors.

» (f) Choice – Allow the learners to use different methods to pursue their work or allow choice in how they organize it.

**3. CONFIDENCE**

» 1. Help students understand their likelihood for success. If they feel they cannot meet the objectives or that the cost (time or effort) is too high, their motivation will decrease.

» 2. Provide objectives and prerequisites – Help students estimate the probability of success by presenting performance requirements and evaluation criteria. Ensure the learners are aware of performance requirements and evaluative criteria.

» 3. Allow for success that is meaningful.

» 4. Grow the Learners – Allow for small steps of growth during the learning process.

» 5. Feedback – Provide feedback and support internal attributions for success.

» 6. Learner Control – Learners should feel some degree of control over their learning and assessment. They should believe that their success is a direct result of the amount of effort they have put forth.

**4. SATISFACTION**

Learning must be rewarding or satisfying in some way, whether it is from a sense of achievement, praise from a higher-up, or mere entertainment.

Make the learner feel as though the skill is useful or beneficial by providing opportunities to use newly acquired knowledge in a real setting.

Provide feedback and reinforcement. When learners appreciate the results, they will be motivated to learn. Satisfaction is based upon motivation, which can be intrinsic or extrinsic.

Do not patronize the learner by over-rewarding easy tasks. They know how well or how poorly they've done. Set standards by not praising mediocre work.

***ARCS = Attention, Relevance, Confidence, Satisfaction = Motivational Design***

**f. * GARDNER, Howard (1983) Multiple Intelligences**

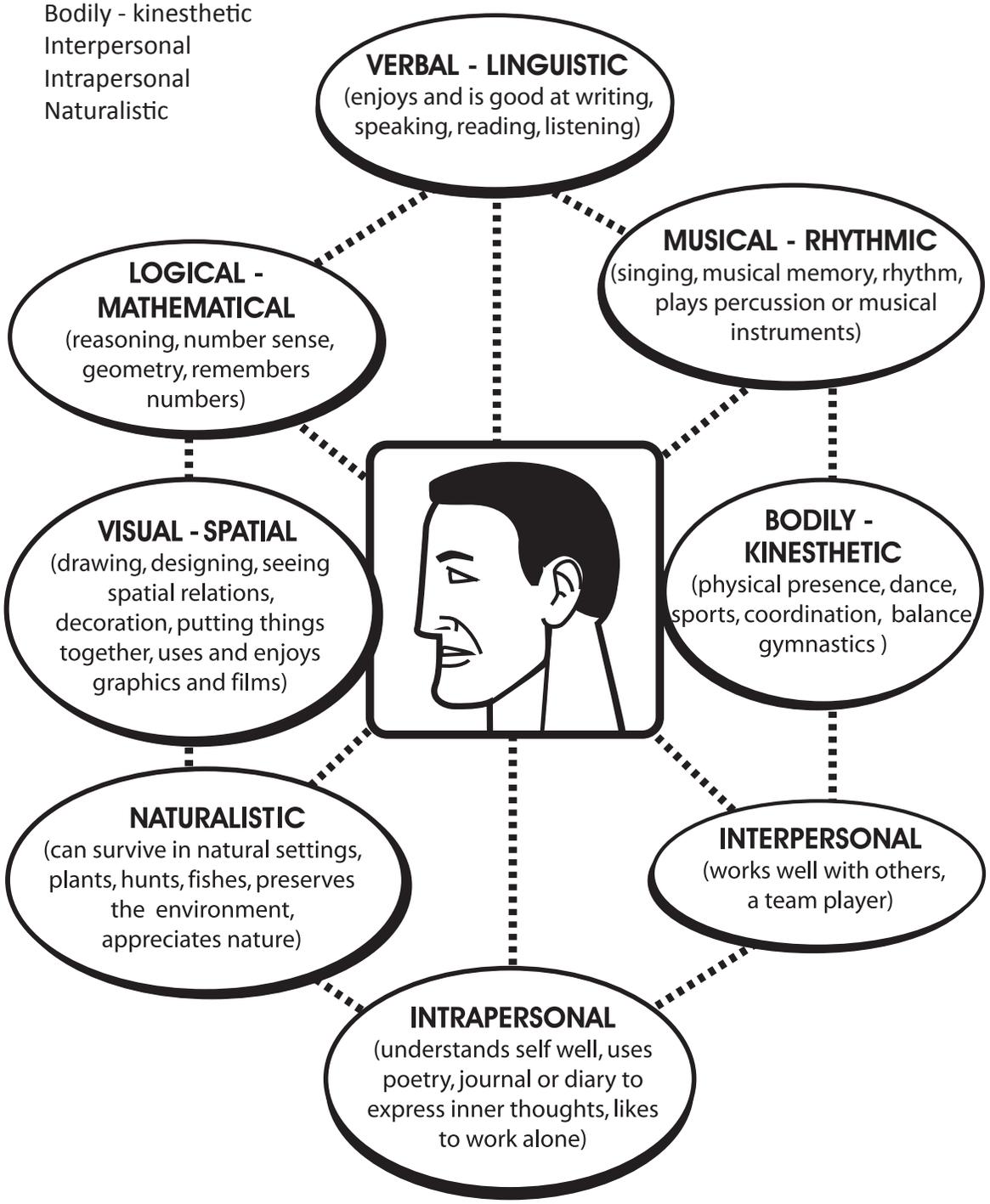
The theory of multiple intelligences was proposed by Howard Gardner in his 1983 book Frames of Mind: The Theory of Multiple Intelligences, as a model of intelligence that differentiates it into specific "modalities", rather than seeing it as dominated by a single general ability.

Gardner articulated seven criteria for a behavior to be considered an "intelligence". These include:

» The intelligences showed: potential for brain isolation by brain damage
» Place in evolutionary history
» Presence of core operations
» Susceptibility to encoding (symbolic expression)
» A distinct developmental progression
» The existence of savants (prodigies and other exceptional people)
» Support from experimental psychology and psychometric findings.

**Gardner chose eight abilities to meet these criteria:**

Musical - rhythmic
Visual - spatial
Verbal - linguistic
Logical - mathematical
Bodily - kinesthetic
Interpersonal
Intrapersonal
Naturalistic



**DESCRIPTIONS**

***1. Musical - rhythmic (and harmonic)***

This area has to do with sensitivity to sounds, rhythms, tones, and music. People with a high musical intelligence normally have good pitch and may even have absolute pitch, and are able to sing, play musical instruments, and compose music.

Since there is a strong auditory component to this intelligence, those who are strongest in it may learn best via lecture or oral presentations and conversation. They will sometimes use songs or rhythms to learn. They have sensitivity to rhythm, pitch, meter, tone, melody or timbre.

***2. Visual - spatial***

This area deals with spatial judgment and the ability to visualize with the mind's eye. Spatial ability is one of the three factors beneath g in the hierarchical model of intelligence.

***3. Verbal - linguistic***

People with high verbal-linguistic intelligence display a facility with words and languages. They are typically good at reading, writing, telling stories and memorizing words along with dates. Verbal ability is one of the most g-loaded abilities. This type of intelligence is associated with the Verbal IQ in WAIS-III.

***4. Logical - mathematical***

This area has to do with logic, abstractions, reasoning, numbers, and critical thinking. This also has to do with having the capacity to understand the underlying principles of some kind of causal system. Logical reasoning is closely linked to fluid intelligence and to general intelligence.

***5. Bodily - kinesthetic***

The core elements of the bodily-kinesthetic intelligence are control of one's bodily motions and the capacity to handle objects skillfully. Gardner elaborates to say that this also includes a sense of timing, a clear sense of the goal of a physical action, along with the ability to train responses.

People who have bodily-kinesthetic intelligence should learn better by involving muscular movement (e.g. getting up and moving around into the learning experience), and be generally good at physical activities such as sports, dance, acting, and making or building things.

Gardner believes that careers that suit those with this intelligence include: athletes, dancers, actors, builders, police officers, , and soldiers. Although these careers can be duplicated through virtual simulation, they will not produce the actual physical learning that is needed in this intelligence.

***6. Interpersonal***

This area has to do with interaction with others. In theory, individuals who have high interpersonal intelligence are characterized by their sensitivity to others' moods, feelings, temperaments and motivations, and their ability to cooperate in order to work as part of a group.

According to Gardner in How Are Kids Smart: Multiple Intelligences in the Classroom, Inter- and Intra- personal intelligences are often misunderstood with being extroverted or liking other people.

Those with this intelligence communicate effectively and empathize easily with others, and may be either leaders or followers. They typically learn best by working with others and often enjoy discussion and debate.

Gardner believes that careers that suit those with this intelligence include salespersons, politicians, managers, teachers, counselors, and social workers.

***7. Intrapersonal***

This area has to do with introspective and self-reflective capacities. This refers to having a deep understanding of the self; what your strengths/weaknesses are, what makes you unique, being able to predict your own reactions/emotions.

Personality refers to the pattern of thoughts, feelings, social adjustments, and behaviors consistently exhibited over time that strongly influences one's expectations, self-perceptions, values, and attitudes. It also predicts human reactions to other people, problems, and stress. There is still no universal consensus on the definition of "personality" in psychology. There are general laws that can be applied to many different people, such as the principle of self-actualization, according to Maslow's Hierarchy of Needs, or the trait of extraversion. Idiographic psychology is an attempt to understand the unique aspects of a particular individual.

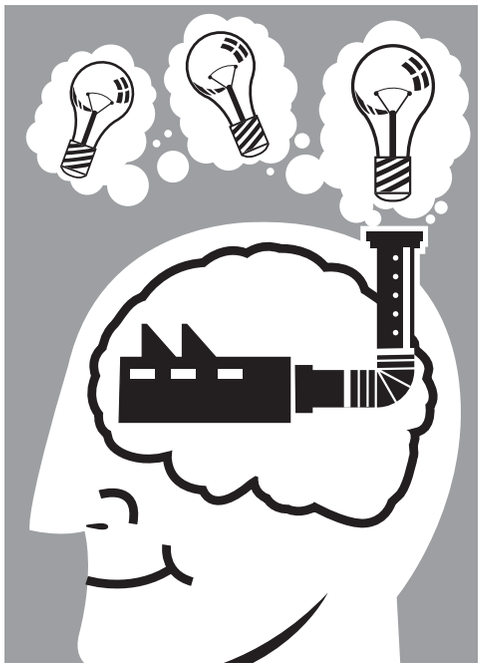
***8. Naturalistic***

This area has to do with nurturing and relating information to one's natural surroundings. Examples include classifying natural forms such as animal and plant species and rocks and mountain types. This ability was clearly of value in our evolutionary past as hunters, gatherers, and farmers; it continues to be central in such roles as botanist or chef.

Gardner argues that there is a wide range of cognitive abilities, but that there are only very weak correlations among them. For example, the theory postulates that a child who learns to multiply easily is not necessarily more intelligent than a child who has more difficulty on this task.

The child who takes more time to master multiplication may best learn to multiply through a different approach, may excel in a field outside mathematics, or may be looking at and understanding the multiplication process at a fundamentally deeper level. Such a fundamental understanding can result in slowness and can hide a mathematical intelligence potentially higher than that of a child who quickly memorizes the multiplication table despite possessing a shallower understanding of the process of multiplication.

***Definition of intelligence***



One major criticism of the Theory of Multiple Intelligences is that Gardner is not expanding the definition of the word "intelligence", but rather denies the existence of intelligence as traditionally understood, and instead uses the word "intelligence" where other people have traditionally used words like "ability" and "aptitude".

Defenders of **MI** theory argue that the traditional definition of intelligence is too narrow, and thus a broader definition more accurately reflects the differing ways in which humans think and learn. They would state that the traditional interpretation of intelligence collapses under the weight of its own logic and definition, noting that intelligence is usually defined as the cognitive or mental capacity of an individual, which by logical necessity would include all forms of mental qualities, not just the ones most transparent to I.Q. tests.

Some criticisms arise from the fact that Gardner has not provided a test of his multiple intelligences. He originally defined it as the ability to solve problems that have value in at least one culture, or as something that a student is interested in.

He then added a disclaimer that he has no fixed definition, and his classification is more of an artistic judgment than fact. Ultimately, it would certainly be desirable to have an algorithm for the selection of an intelligence, such that any trained researcher could determine whether a candidate's intelligence met the appropriate criteria.

At present, however, it must be admitted that the selection (or rejection) of a candidate's intelligence is reminiscent more of an artistic judgment than of a scientific assessment.

Gardner writes "I balk at the unwarranted assumption that certain human abilities can be arbitrarily singled out as intelligence, while others cannot."

Critics hold that given this statement, any interest or ability can be redefined as "intelligence". Thus, studying intelligence becomes difficult, because it diffuses into the broader concept of ability or talent. Defenders of the MI theory would argue that this is simply a recognition of the broad scope of inherent mental abilities, and that such an exhaustive scope by nature defies a one-dimensional classification such as an IQ value.

**g. * GOLEMAN, Daniel (1995) Emotional Intelligence**

The first use of the term "emotional intelligence" is usually attributed to Wayne Payne's 1985 doctoral thesis, A Study of Emotion: Developing Emotional Intelligence. However, prior to this, the term "emotional intelligence" had appeared in Leuner (1966). Stanley Greenspan (1989) also put forward an E-I model, followed by John Mayer (1989), and Daniel Goleman (1995). The distinction between Trait Emotional Intelligence and Ability Emotional Intelligence was introduced in 2000.

**The five traits of Emotional Intelligence include:**

1. Self - Awareness
2. Mood Management
3. Self - Motivation
4. Empathy
5. Managing Relationships

Goleman writes that Emotional Intelligence can be taught. In order to strengthen the five attributes of Emotional Intelligence, families, schools, social and religious groups can guide children to put into practice:

- Self-knowledge
- Self-control
- Self-motivation
- Cooperation
- Perseverance
- Communication
- Empathy

Emotional intelligence (EI) is the ability to identify, assess, and control the emotions of oneself, of others, and of groups. It can be divided into **Ability EI** and **Trait EI.**

**The Ability-based EI** (Emotional Intelligence) model views emotions as useful sources of information that help one to make sense of and navigate the social environment. The model proposes that individuals vary in their ability to process information of an emotional nature and in their ability to relate emotional processing to a wider cognition. This ability is seen to manifest itself in certain adaptive behaviors.

***The model claims that EI includes four types of abilities:***

**Perceiving emotions –** the ability to detect and decipher emotions in faces, pictures, voices, and cultural artifacts—including the ability to identify one's own emotions. Perceiving emotions represents a basic aspect of emotional intelligence, as it makes all other processing of emotional information possible.

**Using emotions –** the ability to harness emotions to facilitate various cognitive activities, such as thinking and problem solving. The emotionally intelligent person can capitalize fully upon his or her changing moods in order to best fit the task at hand.

**Understanding emotions –** the ability to comprehend emotion language and to appreciate complicated relationships among emotions. For example, understanding emotions encompasses the ability to be sensitive to slight variations between emotions, and the ability to recognize and describe how emotions evolve over time.

**Managing emotions –** the ability to regulate emotions in both ourselves and in others. Therefore, the emotionally intelligent person can harness emotions, even negative ones, and manage them to achieve intended goals.

**The Trait EI** is "a constellation of emotional self-perceptions located at the lower levels of personality." In lay terms, Trait EI refers to an individual's self-perceptions of their emotional abilities.

This definition of EI encompasses behavioral dispositions and self perceived abilities and is measured by self-report as opposed to the Ability Based model which refers to actual abilities, which have proven highly resistant to scientific measurement.

In 1983, Howard Gardner's book, Frames of Mind: The Theory of Multiple Intelligences, introduced the idea of Multiple Intelligences, which included both interpersonal intelligence (the capacity to understand the intentions, motivations, and desires of other people) and intrapersonal intelligence (the capacity to understand oneself, to appreciate one's feelings, fears and motivations). In Gardner's view, traditional types of intelligence, such as IQ, fail to fully explain cognitive ability. Thus, even though the names given to the concept varied, there was a common belief that traditional definitions of intelligence were lacking in ability to fully explain performance outcomes.

*"It seems obvious to educators, industry, and general job market that there is little correlation between grades in school and success in life. Success in life depends greatly on one's emotional intelligence." (Gallagher, 2011)*

**Then what are requirements for a successful life?**

People have been trying to answer this question for centuries.

Daniel Goleman presented Emotional Intelligence as a main factor of success. He rejected the conventional concepts of intelligence, IQ scoring reliability and alertness of mind as elements of success. He argued that self-control, zeal, and persistence are the main features of every successful story.

Daniel Goleman quotes a number of studies to prove that many high IQ scoring students have failed in their practical lives while many average people have got phenomenon successes. He claims that if the IQ scoring has to play any role in your success, it can't be more than 20%. He also claims that your 80% success is based on your emotional intelligence.

Goleman discusses a reflexive mode of experience which he calls "self-awareness" or "self-observation". He assimilates self-awareness with Freud's "evenly hovering attention". He says that you should know yourself and your strengths instead of your IQ test and its results.

Some people's mind's easily recognize special symbols or tools, such as metaphors, similes, poetry, songs and fables. If so then you should try your success in these fields instead of following predictions made by the IQ tests. Such inner attunements make you more gifted than others.

Goleman highlights the importance of emotional traits such as enthusiasm and persistence. He says that most of the Asian students show better record of success than their white counterparts, not for their IQ level but persistence to improve their weaknesses.

Goleman quotes a study conducted on a group where each member is a star in the academic IQ test results. The results were astonishing. Some proved excellent and others yielded average or even below average results in an emotional intelligence test. The ultimate study proved that the stars in the emotional intelligence tests were the people who used to get their work finished. Interestingly, it is one of the main characteristics of the successful people. The average or the below average scorers in the emotional intelligence people were those who start many tasks at a time and leave most of them unfinished. It is one of the reasons behind most of the unsuccessful people.

Recent research on the relationship between health and the emotions shows that: "A network of researchers is finding that the chemical messengers that operate most extensively in both brain and immune system are those that are most dense in neural areas that regulate emotion."

People who experience chronic anxiety, long periods of sadness and pessimism, unremitting tension or incessant hostility, relentless cynicism or suspiciousness, face double the risk of disease—including asthma, arthritis, headaches, peptic ulcers, and heart disease. Goleman writes that the children who are often subject of beating by their parents, react with the same way in distress. They lose empathy if they have to face such situations frequently.

Goleman observes that when you face trauma you may end in biological problems. But the problem becomes severe when you are put in an uncontrollable stress. The people having strong right and left frontal activity were tested on a personality test. The first group showed a distinctive behavior. They were prone to be moody, suspicious of the world and worried about small problems. However, the second group showed entirely different trends. They were lower in depression, more confident and rewardingly engaged in life.

Goleman says that emotional intelligence can be taught. However, it is not enough to lecture children. Instead, they should be allowed to see ethics in practice. Furthermore, they should be given different models of ethics so that they may develop their own value and conclusions

# PART IV

## Designs and models in use.

As educators strive to improve education, in terms of visible, measurable results, as determined by standardized examinations, there are many "models" of what we should be doing to attain the results we want: higher test scores on external, standardized exams, as opposed to "teacher-made tests".

Some U.S.A. states, such as Texas have exams developed by the state, so standards are based solely on what the State of Texas expects of their children. Other states, such as Maine, choose to buy exams from outside testing agencies, so as to have a more global approach as to what is to be tested. Now that the U.S.A. has moved towards "National Core Standards" for curriculum topics to be mastered nationally, states may be moving towards a national academic standardized exam.

In Mexico, government testing of public school primary students in both Spanish and English has been occurring for about ten years. The ENLACE is one example of a government test. As the public demand for visible improvements in test scores grows, the ENLACE exam is being revised and "educational reforms" continue to be proposed.

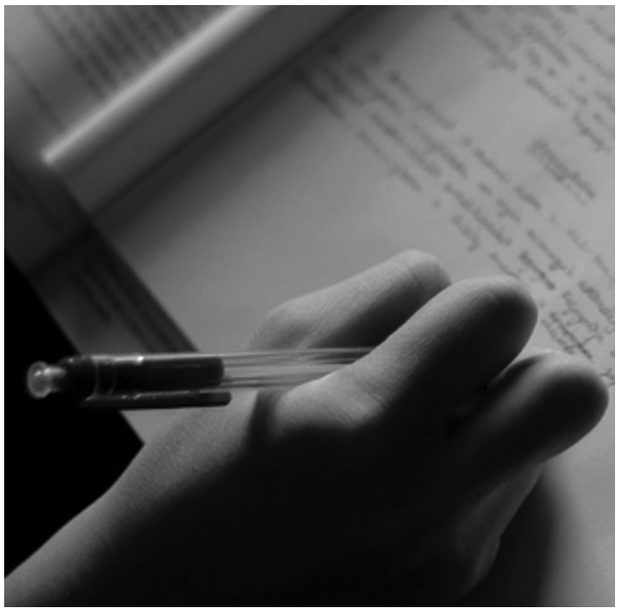

In Spain, the exam of "Selectividad" determines who may go on to public (free) universities, or who must stay behind and pay for private higher education.

The problem with all these standardized exams is that they are multiple choice, therefore cannot reflect what all students have learned, because every student is not able to show what he/she has learned on the basis of multiple choice. Some learners need to express their knowledge orally, others can demonstrate it by applying, via demonstration, what they know; still others, more linguistically inclined, can express well in essay format.

In the U.S.A., each state has its own requirements for high school graduation. Some states base standards solely on grades in school, passing enough specific courses, with 70% minimum, and accumulating credits, the student can be graduated.

Interestingly, countries vary in what is "passing". In U.S.A., Canada, and Ecuador, for example, 70% is the minimum to pass courses. Other countries, such as Mexico and Guatemala, 60% is the minimum to pass any course. In Spain, 50% is the minimum.

Some U.S.A. states, "high-stakes testing" states, such as Texas, rigidly and inflexibly, require a certain number of courses to be passed, BUT, if the student does not pass the state exam for high school graduation, in mathematics, science, reading and writing, despite perfect grades and attendance, he/she cannot be graduated from high school!



Other states, more humanistic in their approach, such as Maine's public schools, do not give grades in pre-school, primary, or middle school. Parents receive narrative reports. Furthermore every public school student entering 6th grade (beginning of Middle School) receives (free) a personal Apple laptop computer. Parents pay only a small insurance fee in case of loss or breakage.

In Maine's high schools, grades are given, and credits are accumulated. Oral, performance, or essay exams are given to students whose learning style does not permit them to do well on multiple-choice exams. High school graduation is not based on one sole exam requirement.
Students' grades, a portfolio of a sampling exemplary student work, a self-evaluation, an exam, attendance, and participation in activities, are all taken into a balanced view, and form the base for high school graduation requirements.
Considering all these varied approaches and philosophies to grades and graduation requirements, it is no wonder that there are a wide variety of educational models, each claiming to offer the "best" success for student achievement.
In the following section, we will look at each of the three main kinds of educational models, with examples of each kind. No one model is "perfect", nor are any models worthless. Each school, each teacher should be aware of what is out there, so as to offer an eclectic approach, with an attempt to help students and teachers reach their potential (self-actualization).

**The seventeen models we'll learn about, are listed below.**

***1. Prescriptive design-based research***

| | |
|---|---|
| a. KELLER: | ARCS Model of Motivational Design |
| b. REIGELUTH: | Elaboration Theory |
| c. *HUNTER: | Model of Effective Teaching and Supervision (METS) |
| d. ADDIE: | Model of Instructional Design |

These four PRESCRIPTIVE models are based on a prescription, a recipe, which means that the proponents of each of these models say that if you follow the model, you'll end up with successful classes, learners who can exhibit high level thinking skills, and students who are satisfied and happy in school.
This author, in the early 1980's, was fortunate enough to have been sent to El Paso, Texas, to participate in a 40 hour, week's long course on METS, Model of Effective Teaching and Supervision. It changed my teaching focus, taught me topics I had never learned in my previous 20-years of

teaching, such as Bloom's Taxonomy and Motivation Theory.
Applying the METS Model caused me to become a better teacher, and made me the teacher I am today. It is timeless. Without doubt, even 40 years after its inception and development by Dr. Madeline Hunter, it still gets results.

***2. Descriptive and Meta Theories***

| | |
|---|---|
| a. *VYGOTSKY, ENGSTROM, LURIA: | Activity Theory |
| b. LATOUR , CALLON: | Actor Network |
| c. HUTCHINS: | Distributed Cognition |
| d. * BLOOM: | Bloom's Taxonomy |
| e. * BRUNER: | Spiral Curriculum; Readiness for learning |
| f. * BUZAN: | Images Retention; Mind Maps |

***3. Identity Models***

| | |
|---|---|
| a. ERIKSON: | Erikson's Stages of Development |
| b. MARCIA: | Identity Status Theory |
| c. DWECK: | Self-Theories: Entity and Incremental |

***4. Miscellaneous Learning Models***

| | |
|---|---|
| a. GIBSON: | Affordance Theory |
| b. * PIAGET: | Stages of Growth: Birth-12+years |
| c. * MONTESSORI: | Stages of Growth: Birth - 2 years |
| d. * KRASHEN: | Recognition Precedes Production; Acquisition Activities support L-2 more than "Learning Activities" |

## 1. Prescriptive Design-Based Research

**A. John KELLER: (1983) Model of Motivational Design**
***ARCS: Attention, Relevance, Confidence, Satisfaction***
This model falls within the Motivational and Humanistic Theories.
It was fully described in PART III.

According to John Keller's ARCS Model of Motivational Design, there are four steps for promoting and sustaining motivation in the learning process: Attention, Relevance, Confidence, Satisfaction. (ARCS). If you follow Keller's four steps for promoting motivation, you should greatly improve the environment by which your students will be more motivated.

**B. Charles REIGELUTH: (1970'S)Elaboration Theory**
This falls with the group known as "Cognitive Theories".
It is fully described in PART III. Reigeluth claims if you apply his theory in the classroom, your students will remember more.

Charles Reigeluth is the creator of an instructional design system called Elaboration Theory, in which information to be learned is arranged so that simpler concepts build up to narrower and more detailed elaborations, thereby placing the content in a meaningful context.
According to Elaboration Theory, in each lesson, the learner should be reminded of all versions taught so far (summary/synthesis). A key idea of Elaboration Theory is that the learner needs to develop a meaningful context into which subsequent ideas and skills can be assimilated.
It's claimed that the Elaboration Approach results in the formation of more stable cognitive structures and, therefore, better retention and transfer, increased learner motivation, through the creation of meaningful
learning contexts. Elaboration Theory is an extension of the work of David Ausubel (advance organizers) and Jerome Bruner (spiral curriculum).

**c. * Madeline HUNTER: (1970's-90's) METS Model of Effective Teaching and Supervision**
The METS model falls in "Prescriptive Models", because if you follow the METS model methods, you will have great success.
The METS Model consists of two parts:
***1. The Lesson Cycle***
***2. Effective Teaching Practices (ETP´s)***

**The Lesson Cycle (5 Steps)**
***Step 1: The FOCUS:***
This is where the teacher "focuses" the lesson to come for the students. It is to prepare the students for the topics of the day and to get their attention for the lesson that follows.

***Step 2: The Explanation***
This is the actual lesson to be taught. It could be a review lesson or a new topic, but each explanation should include:
Models or modeling: where the teacher or students show (model) what is to be learned, either verbally or by example on a poster or worksheet.
Definitions of the words within the lesson so that students fully understand what will be taught. The teacher gives the words and the definitions , and explains or models the words' meanings. This is NOT a dictionary exercise; the students do not look up the words; they copy them from the teacher's examples on a poster.
Rules or steps: if the lesson requires something to be learned in chronological order (for example dates in social studies) the teacher shows the students examples of what is to be covered in order to help the students learn techniques to recall dates.
Examples: The teacher should always give examples as he/she explains the lesson so that students can relate the old material to the new.

***Step 3: Guided Practice***
It is work done by the students, but it is always 100% guided by the teacher. It can be a practice worksheet, or an oral practice, or a game activity.
The important factor is that the teacher is GUIDING the students as they work so the teacher can

tell whether or not the students have mastered the concept.

***Step 4: Independent Practice:***
Once the teacher is certain that the students understand the concepts being taught, as exemplified by success in guided practice, then, and ONLY then, is the teacher ready to give the fourth step , which is INDEPENDENT PRACTICE. Independent practice could be a quiz, an exam, a presentation in front of the class, or a research project completed over several weeks. It is graded.

***Step 5: Closure.***
Closure is a brief ending activity whereby the teacher asks the students to recant some of the major topics covered in class that day. Using CLOSURE, students are able to record in their brains the major points of the lesson, and when the teacher begins the next day with a FOCUS, the students can more easily remember what had been taught the previous day.

**Important points about the lesson cycle:**

» Every lesson needs to begin with a focus and end with a closure.
» Every lesson needs an explanation, with vocabulary and examples.
» Before giving an independent practice, the students must have exhibited success with a guided practice activity.

**EFFECTIVE TEACHING PRACTICES (ETP'S)**

**Effective Teaching Practices (ETP´S)**

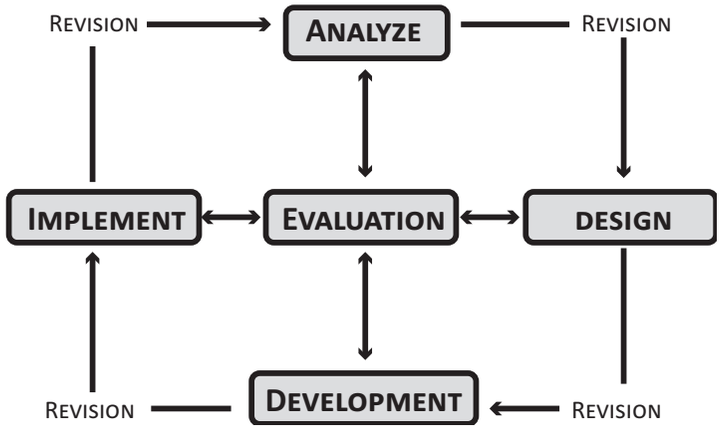
| **A** Teaching Strategies | **B** Time on-task | **C** Reinforcement | **D** School Climate |
|---|---|---|---|
| 1. Questioning techniques | 1. Three kinds of time | 1. Positive | 1, Motivation |
| 2. Critical Thinking | 2. ALT | 2. Negative | 2. Rules |
| 3. Stimulus Variation | | | |
| 4. Retention Theory | 3. Sponge Activities | 3. Extinction | 3. Expectations |
| 5. Transfer | | | |

Using both parts of the METS model, teachers will stimulate students' brains and interest in the lessons, learning more and remembering it longer.

**d. ADDIE Model of Instructional Design (1970's - 1980's)**

The ADDIE model was designed at Florida State University. It is a generic model that instructional designers and training developers use. It represents a guideline for building effective training and performance support in five phases. This acronym stands for:

**A**nalysis
**D**esign
**D**evelopment
**I**mplementation
**E**valuation




It is an Instructional Design System Model. Most current school models are variations of the ADDIE process. The idea is to review continual, formative feedback while creating instructional materials. This model strives to save time and money by catching problems while they are still easy to fix.

Instructional theories also play an important role in the design of instructional materials. Theories such as behaviorism, constructivism, social learning, and cognitive learning, help shape and define the outcome of instructional materials.

## 2. Descriptive and Meta Theories

» A descriptive theory gives a description of a theory.
» A meta-theory is a theory about some theory.

All fields of research share some meta-theory regardless of whether this is explicit or correct. Example: in mathematics and mathematical logic, meta-theory means a mathematical theory about another mathematical theory.

**a. * Lev VYGOTSKY, Yrjo ENGSTROM, Alexander R. LURIA, etc.: (1930's) Activity Theory**

Activity Theory (AT) is an umbrella term, a line of eclectic social sciences theories and research with its roots in the Soviet Psychological Activity Theory. Scholars sought to understand human activities as complex, socially situated phenomena.

The goal of Activity Theory is understanding the mental capabilities of a single individual. However, it rejects the isolated individuals as an insufficient unit of analysis, analyzing the cultural and technical aspects of human actions. Activity Theory is most often used to describe actions in a social-technical system.

In developing AT, Russian scholars wanted to go beyond paradigms of reflexology (the teaching of

Vladimir Bekhterev and his followers) and the physiology of higher nervous activity (the teaching of Ivan Pavlov and his school), psychoanalysis and behaviorism (Freud).
It became one of the major psychological approaches in the former USSR, being widely used in both theoretical and applied psychology, and in education, professional training, ergonomics and work psychology.
Activity Theory is more of a descriptive meta-theory or framework than a predictive theory. It considers an entire work/activity system (including teams, organizations, etc.) beyond just one actor or user. It accounts for environment, history of the person, culture, role of the artifact, motivations, and complexity of real life activity.
The origins of Activity Theory can be traced to several sources, which have subsequently given rise to various complementary and intertwined strands of development. One is associated with Engstrom, another with the Moscow Institute of Psychology, and in particular the "troika" of young Russian researchers, Vygotsky, Leont'ev and Luria. Vygotsky founded cultural-historical psychology, a field that became the basis for modern AT.

**b. Bruno LATOUR , Michel CALLON (1990's) Actor-Network Theory**

Actor-Network Theory, often abbreviated as ANT, is an approach to social theory and research, originating in the field of science studies, which treats objects as part of social networks. Although it is best known for its controversial insistence on the capacity of nonhumans to act or participate in systems and/or networks, ANT is also associated with forceful critiques of conventional and critical sociology.
Developed by science and technology studies scholars Michel Callon and Bruno Latour, the sociologist John Law, and others, it can more technically be described as a "material-semiotic" method. This means that it maps relations that are simultaneously material (between things) and semiotic (between concepts). It assumes that many relations are both material and semiotic.
Broadly speaking, ANT is a constructivist approach in that it avoids essentialist explanations of events or innovations (e.g. explaining a successful theory by saying it is "true" and the others are "false").
Actor–Network Theory tries to explain how material–semiotic networks come together to act as a whole; the clusters of actors involved in creating meaning are both material and semiotic.
This means that relations need to be repeatedly "performed" or the network will dissolve. They also assume that networks of relations are not intrinsically coherent, and may indeed contain conflicts. Social relations, in other words, are only ever in process, and must be performed continuously.

**c. Edwin HUTCHINS (1980'S) Distributed Cognition**

Distributed Cognition is a psychological theory that proposes that knowledge lies not only within the individual ,but also in the individual's social and physical environment. This theory was developed by Edwin Hutchins. Using insights from sociology, cognitive science, and the psychology of Vygoysky, it emphasizes the social aspects of cognition.
It is a framework (not a method) that involves the coordination between individuals, artifacts, and the environment. It has several key components:

» Embodiment of information that is embedded in representations of interaction
» Coordination of action among embodied agents
» Ecological contributions to a cognitive ecosystem

Distributed Cognition is a useful approach for designing social aspects of cognition by putting emphasis on the individual and his/her environment. Distributed cognition views a system as a set of representations and models the interchange of information between these representations. These representations can be either in the mental space of the participants or external representations available in the environment.

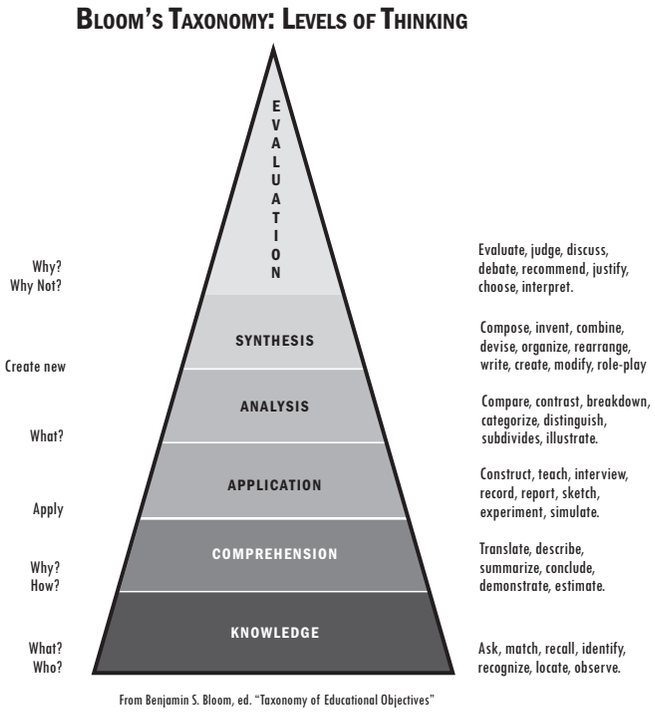
Distributed Cognition is a branch of cognitive science that proposes that human knowledge and cognition are not confined to the individual. Instead, it is distributed by placing memories, facts, or knowledge on the objects, individuals, and tools in our environment.

In a sense, it expresses cognition as the process of information that occurs from interaction with symbols in the world. It considers and labels all phenomena responsible for this processing as ecological elements of a cognitive ecosystem. The ecosystem is the environment in which ecological elements assemble and interact in respect to a specific cognitive process.

**d. * Benjamin BLOOM (1956) Bloom's Taxonomy**

Bloom's Taxonomy is a classification of learning objectives within education proposed in 1956 by a committee of educators chaired by Benjamin Bloom, who also edited the first volume of the standard text, Taxonomy of Educational Objectives: the Classification of Educational Goals.

After considerable discussion, there was agreement that a theoretical framework might best be obtained through a system of classifying the goals of the educational process, since educational objectives provide the basis for building curricula and tests and represent the starting point for much of our educational research.




It refers to a classification of the different objectives that educators set for students (learning objectives). Bloom's Taxonomy divides educational objectives into three "domains": Cognitive, Affective, and Psychomotor. Within the domains, learning at the higher levels is dependent on having attained prerequisite knowledge and skills at lower levels. A goal of Bloom's Taxonomy is to motivate educators to focus on all three domains, creating a more holistic form of education.

Most educators are more familiar with the six level of the Cognitive Domain, as illustrated in Part III. A revised version of the taxonomy was created in 2000.

Bloom's Taxonomy is considered to be a foundational and essential element within the education community as evidenced in the 1981 survey Significant Writings That Have Influenced the Curriculum: 1906-1981, by H.G. Shane and the 1994 yearbook of the National Society for the Study of Education.

This illustration shows all three DOMAINS as developed by Dr. Benjamin Bloom and his colleagues: COGNITIVE, AFFECTIVE, and PSYCHOMOTOR.


**e. * Jerome BRUNER ( 1960) Spiral Curriculum; Readiness for Learning**

Bruner's model of the Spiral Curriculum is an element of educational philosophy suggesting that students should continually return to basic ideas as new subjects and concepts are added over the course of a curriculum. This is done in order to solidify understanding over periodic intervals.

The idea behind the method is for students to really learn, rather than simply memorize equations to pass a test. The Spiral Curriculum Theory revolves around the understanding that human cognition evolved in a step-by-step process of learning. One learns best through the repeated experience of a concept.

Over the course of development, behaviors and pieces of knowledge are reinforced by outcomes, and Bruner's model of the Spiral Curriculum seeks to match that learning process in the

classroom.

The concept goes along with Bruner's theory of discovery learning, which posits that students learn best by building on their current knowledge. Bruner also emphasized learning motivated by interest in the material, rather than by objective means like grades or punishments.

He introduced the ideas of "readiness for learning". Bruner believed that any subject could be taught at any stage of development in a way that fit the child's cognitive abilities. Spiral Curriculum refers to the idea of revisiting basic ideas over and over, building upon them and elaborating to the level of full understanding and mastery.

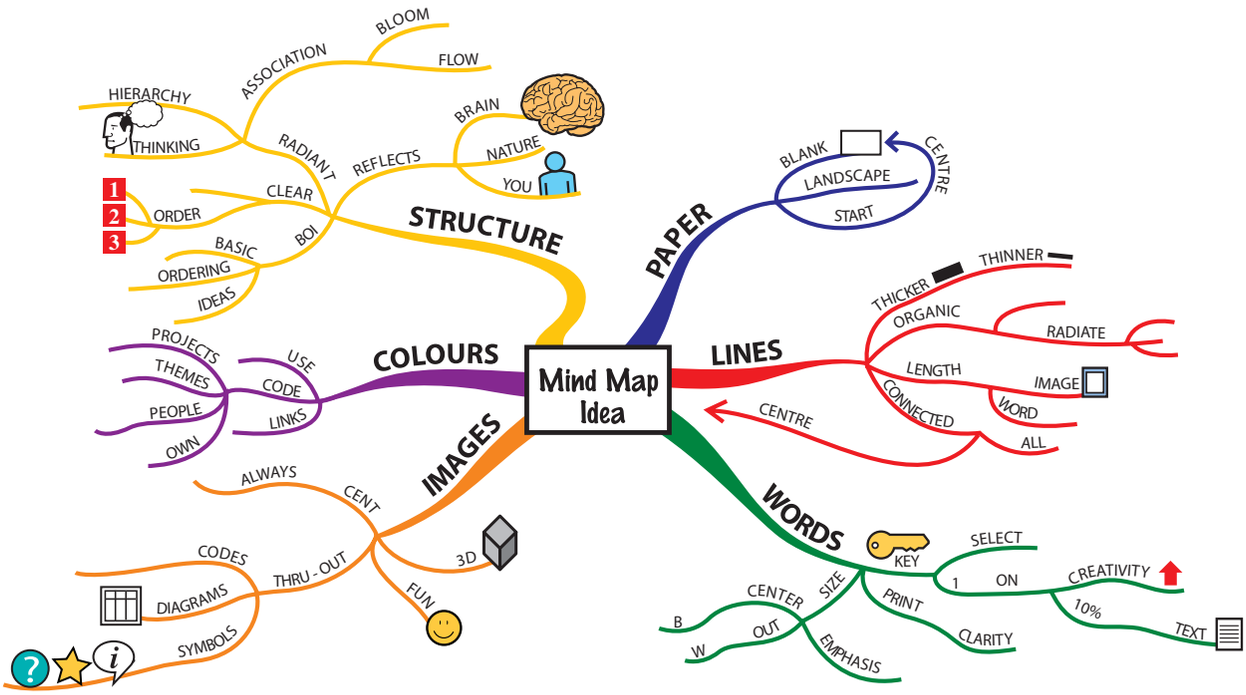
***f. * Tony BUZAN (1990's) Images Retention; Mind Maps***

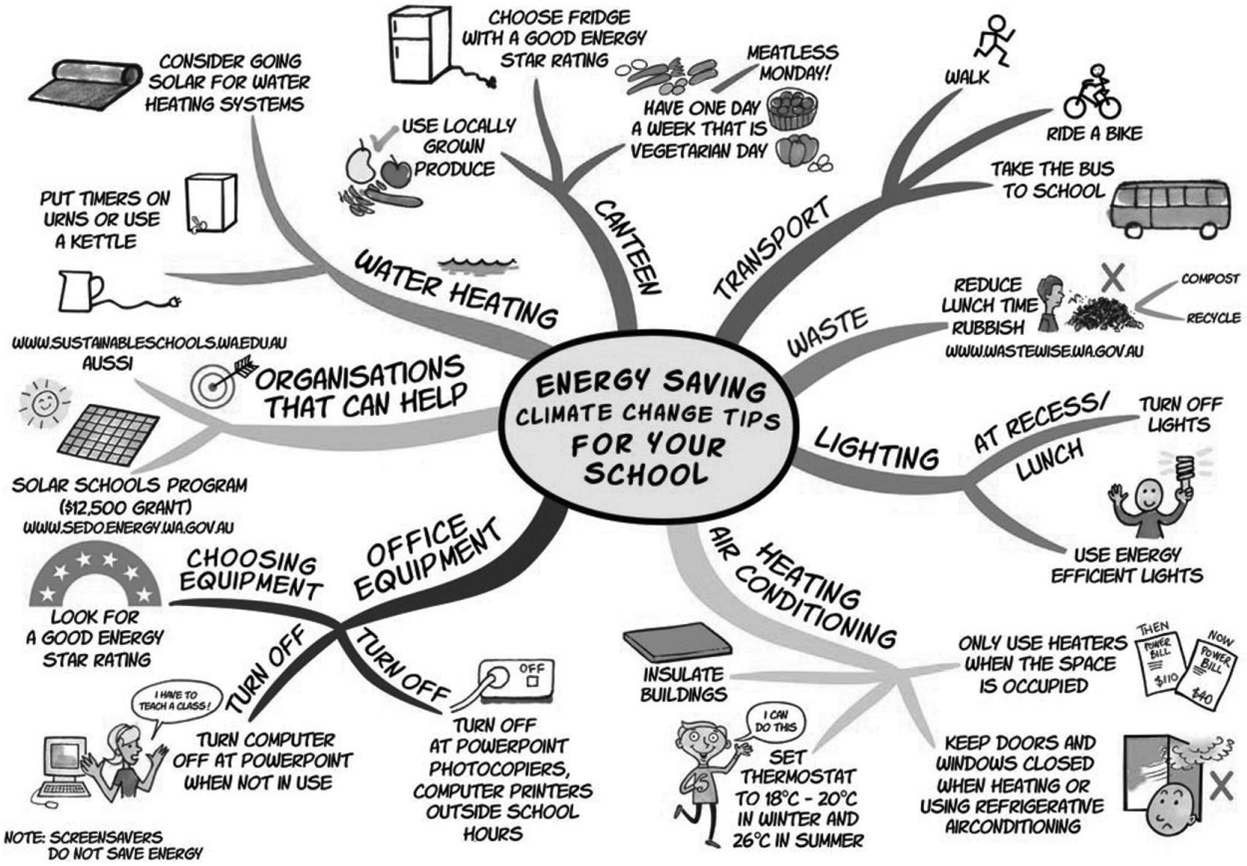
***What is a Mind Map?***

A Mind Map is a powerful graphic technique which provides a universal key to unlock the potential of the brain. It harnesses the full range of cortical skills – word, image, number, logic, rhythm, color, and spatial awareness – in a single, uniquely powerful manner. In so doing, it gives you the freedom to roam the infinite expanses of your brain. The Mind Map can be applied to every aspect of life where improved learning and clearer thinking will enhance human performance.

Humans seem to be able to remember things more easily when they are presented in a graphic form, rather than in many words. Usually, graphics are more easily understood, as well.

The llustration below uses a Mind Map to explain what a Mind Map is.






***Seven steps to making a Mind Map***

**1. Start in the CENTER of a blank page turned horizontally. Why?**
Because starting in the center gives your brain freedom to spread out in all directions and to express itself more freely and naturally.

**2. Use an IMAGE or PICTURE for your central idea. Why?**
Because an image is worth a thousand words and helps you use your imagination. A central image is more interesting, keeps you focused, helps you concentrate, and gives your brain more of a buzz!

**3. Use COLORS throughout. Why?**
Because colors are as exciting to your brain as are images. Color adds extra vibrancy and life to your Mind Map; it adds tremendous energy to your creative thinking, and is fun!

**4. CONNECT your MAIN BRANCHES to the central image and connect your second- and third-level branches to the first and second levels, etc. Why?**
Because your brain works by association. It likes to link two (or three, or four) things together. If

you connect the branches, you will understand and remember a lot more easily.

**5. Make your branches CURVED rather than straight-lined. Why?**
Because having nothing but straight lines is boring to your brain.

**6. Use ONE KEY WORD PER LINE. Why?**
Because single key words give your Mind Map more power and flexibility.

**7. Use IMAGES throughout. Why?**
Because each image, like the central image, is also worth a thousand words.
So if you have only 10 images in your Mind Map, it's already the equal of 10,000 words of notes!

## 3. Identity Models

These models help educators to identify specific characteristics of learners, their identity--such as how they grow and develop how they think. We are able to use these models to help us note our own identity, interests, development, and expectations.

**a. Erik ERIKSON (1950's - 1980's) Erikson's Stages of Development**
The Erik Erikson stages of development offer a model of how we change through the years.
By using these stages, and by asking pertinent questions, we can help others (or they can help themselves) to prepare for favorable outcomes.

**b. James MARCIA (1990's - current) Identity Status Theory**
Ego-identity Status
James Marcia is perhaps best known for his extensive research and writings on psychological development, with specific attention focused on adolescent psychosocial development and lifespan identity development. Erik H. Erikson had suggested that the normal conflicts, which occur in adolescence, are the result of the opposition between identity achievement and identity confusion.
Marcia elaborated on Erikson's proposal by suggesting this stage consists neither of identity resolution nor identity confusion as Erikson claimed, but is better understood as the extent to which one has both explored and committed to an identity in a variety of life domains including politics, occupation, religion, intimate relationships, friendships, and gender roles.
'Two crucial areas in which the adolescent must make such commitments are ideology and occupation'.
His theory of identity achievement states that there are two distinct parts contributing to the achievement of adolescent identity: a time of choosing or crisis, and a commitment.

Marcia defined a crisis as a time of upheaval where old values or choices are being reexamined and new alternatives are explored - 'Times during adolescence when the individual seems to be actively involved in choosing among alternative occupations and beliefs'.
Both exploration and commitment are the two processes that contribute to differences in

outcome during an identity crisis. That is, whether or not (the extent to which) one explores identity alternatives and whether or not one makes a commitment to chosen alternatives.

Marcia identifies FOUR IDENTITY STATES . He does not see that every adolescent goes through all four identities.

**1. IDENTITY DIFFUSION**

This identity describes youth who have neither explored nor committed to any particular identity. Thus, this identity status represents a low level of exploration and a low level of commitment. These adolescents haven't considered their identity at all, and haven't established any life goals. They are reactive, passively floating through life and dealing with each situation as it arises. Their primary motivation is hedonic: the avoidance of discomfort and the acquisition of pleasure.

**2. IDENTITY FORECLOSURE STATUS**

This identity status represents a low degree of exploration but a high degree of commitment. At this identity status adolescents are not actively trying to determine what is important to them. They are not questioning the values and beliefs they have been taught. Instead, these youth obtain their identity simply by accepting the beliefs and values of their family, community, and culture. In a sense, they passively accept the identity assigned to them. While these youth are committed to values and life goals assigned to them, they do not question why they should be, nor do they consider any alternatives.

**3. MORATORIUM**

This identity status represents high degree of exploration but a low degree of commitment. At this status, youth are in the midst of an identity "crisis" which has prompted them to explore and experiment with different values, beliefs, and goals. However, they have not made any final decisions about which beliefs and values are most important to them, and which principles should guide their lives. Thus, they are not yet committed to a particular identity. They are keeping their options open.

**4. IDENTITY ACHIEVEMENT**

This identity status represents both a high degree of exploration and a high degree of commitment. Youth are said to have achieved their identity by a process of active exploration and strong commitment to a particular set of values, beliefs, and life goals that has emerged from this active exploration and examination.

At this identity status youth will have decided what values and goals are most important to them, and what purpose, or mission will direct their life. Youth at the identity achievement status are able to prioritize what is important to them and have sorted through the many possibilities of who they want to be. They will have experimented with many different beliefs and values, and analyzed their pathway in life.

To fully achieve this type of identity youth must feel positive and confident about their decisions and values.

**c. Carol DWECK (2000's) Self-Theories: Entity and Incremental**

Professor Carol Dweck is currently on the faculty of Stanford University. Her primary research interests are in motivation, personality, and development. Her key contribution to social psychology relates to implicit theories of intelligence. This is present in her book entitled Mindset: The New Psychology of Success, which was published in 2006.

According to Dweck, individuals can be placed on a continuum according to their implicit views of where ability comes from. Some believe their success is based on innate ability; these are said to have a "fixed" theory of intelligence (fixed mindset). Others, who believe their success is based on hard work, learning, training, and doggedness are said to have a "growth" or an "incremental" theory of intelligence (growth mindset).

Individuals may not necessarily be aware of their own mindset, but their mindset can still be discerned based on their behavior. It is especially evident in their reaction to failure. Fixed-mindset individuals dread failure because it is a negative statement on their basic abilities, while growth mindset individuals don't mind or fear failure as much because they realize their performance can be improved and learning comes from failure. These two mindsets play an important role in all aspects of a person's life. Dweck argues that the growth mindset will allow a person to live a less stressful and more successful life.

Dweck's definition of fixed and growth mindsets from a 2012 interview:

"In a fixed mindset students believe their basic abilities, their intelligence, their talents, are just fixed traits. They have a certain amount and that's that, and then their goal becomes to look smart all the time and never look dumb in a growth mindset students understand that their talents and abilities can be developed through effort, good teaching, and persistence. They don't necessarily think everyone's the same or anyone can be Einstein, but they believe everyone can get smarter if they work at it."

***This is important because***

» Individuals with a "growth" theory are more likely to continue working hard despite setbacks and

» Individuals' theories of intelligence can be affected by subtle environmental cues.

For example, children given praise such as "good job, you're very smart" are much more likely to develop a fixed mindset, whereas if given compliments like "good job, you worked very hard" they are likely to develop a growth mindset. In other words, it is possible to encourage students, for example, to persist despite failure by encouraging them to think about learning in a certain way.

## 4. Miscellaneous Learning Models

**a. James GIBSON (1970'S) Affordance Theory**

An affordance is a quality of an object, or an environment, which allows an individual to perform an action. For example, a knob affords twisting, and perhaps pushing, while a cord affords pulling.

The term has further evolved for use in the context of Human-Computer Interaction (HCI) to indicate the easy discoverability of possible actions.

The word is used in a variety of fields: perceptual psychology, cognitive psychology, industrial design, and artificial intelligence

Psychologist James Gibson originally introduced the term in his 1977 article "The Theory of Affordances", and explored it more fully in his book The Ecological Approach to Visual Perception in 1979.

He defined affordances as all "action possibilities" latent in the environment, objectively measurable, and independent of the individual's ability to recognize them, but always in relation to agents and therefore dependent on their capabilities.

For instance, a set of steps which rises four feet high does not afford the act of climbing if the actor is a crawling infant. Gibson's is the prevalent definition in cognitive psychology.

The different interpretations of affordances, although closely related, can be a source of confusion in writing and conversation if the intended meaning is not made explicit and if the word is not used consistently. Even authoritative textbooks can be inconsistent in their use of the term.

Affordance isn't usually used or needed to be known in typical classroom teaching situation. If, however, you're working with computers or artificial intelligence, knowing about affordance can be important.

**b. * Jean PIAGET (1960's-1980's ) Stages of Growth: Birth-12+years**

The sociological model of development

There is much information about Piaget's Stages of Development in PART III,so they are not reviewed here.

Piaget proposed that children moved from a position of egocentrism to socio-centrism. For this explanation he combined the use of psychological and clinical methods to create what he called a semi-clinical interview. He began the interview by asking children standardized questions and depending on how they answered, he would ask them a series of nonstandard questions. Piaget was looking for what he called "spontaneous conviction" so he often asked questions the children neither expected nor anticipated.

In his studies, he noticed there was a gradual progression from intuitive to scientific and socially acceptable responses. Piaget theorized children did this because of the social interaction and the challenge to younger children's ideas by the ideas of those children who were more advanced. Eventually, Piaget developed the four stages of children's growth, as explained in PART III.

The educational application of Piaget's (and Montessori's) 40+ years of observations of children include the following major findings, now supported by brain studies, by many researchers, including Tomás Ortiz, M.D. from the Department of Medicine at the Universidad Complutense in Madrid, Spain.

1. Children must develop gross motor skills prior to fine motor skills.

2. Gross motor skills (include running, jumping, climbing, tossing/catching/rolling a large ball, circle games, large bodily movements) must be practiced and encouraged, along with singing, choral recitations, development of a large oral

vocabulary in more than one language, orally identifying objects in pictures, using rhythm instruments, and art, such as finger-painting, ripping paper shapes to paste, etc.

3. Gross motor skills need to be developed between ages 2 and 6 years.

4. Fine motor skills include cutting with scissors, coloring with normal-sized crayons, writing with pencils or pens, and being taught to read using texts, phonics charts, etc.

5. A child's ability in gross motor skills needs to be fully developed by end of age six, before the child moves on to fine motor skills.

6. This has nothing to do with intelligence or social/economic status of the child. It has to do with brain development connected to bodily skills development.

7. If this pattern is respected, by age 7, all normal children will learn how to read quickly, efficiently, and effectively. If, however, we push the child to complete fine motor skills before age 6, we see a rise to 15% of the children by 2nd or 3rd grade exhibiting symptoms of dyslexia.

8. Many school systems in Mexico, USA, Canada, recognize the importance of Piaget's and Montessori's work, so are advising schools NOT to teach reading or writing until first grade of primary. some schools ignore this dictate, having a "false pride" that their students are reading and writing by age five. They cannot realize the harm they do to many children. After all, what's the rush?

**c. * Maria MONTESSORI (1940's-1960's) Stages of Growth: Birth - 2 years**

Maria Montessori, as Jean Piaget, developed Stages of Development for children birth to two years. She was the first female medical doctor in Italy, and worked in a hospital with handicapped and supposedly "learning disabled" children.

Montessori said that we should never do for a child what he/she can do for himself/herself. She believed that we should never underestimate what children are capable of doing.

Observing her patients, she noted many needs, so invented her own toys and furniture to best meet the needs of the children. In a relatively short time, many of her patients were able to enter regular schools.

Read more about her work which is reviewed in PART III.

**d. * Stephen KRASHEN (1970's - 1990's) Recognition Precedes Production**

Acquisition  Activities support L2 more than "LearnActivities"

Dr. Stephen Krashen is the promoter of the "Natural Approach" to second language learning. Much of his linguistic research on how people best learn second languages was incorporated into the CLIL philosophy, as presented to the European Union in 1994 by Dr. David Marsh and his team in Helsinki.

In 2013, CLIL (Content and Language Integrated Learning) philosophy is accepted as a leading philosophy in language teaching, because it obtains results, oral fluency.

It was Krashen's research into the differences in results between teaching grammar, translation, and structural patterns or learning a language through acquisition activities, such as games, songs, natural conversation, no translations, and much oral practice in relaxed situations. Results supported that the acquisition activities obtained better results.

You can read more about Krashen's work in PART III.

# PART V

## Summary and Conclusion

You've now had the opportunity to read about 25 world leaders in education from the past 1500 years, and how they related to each other, as well as learning about the impact each one has had on educational thought, philosophy, and practice.

You've been provided with support readings, summaries of theories, and explanations about how some educational leaders fit into specific schools of thought.

You're now armed with a wealth of knowledge about how educational techniques and technology should be implemented for the best possible success of your students.

Use your skills and knowledge to be the best teacher you can be!

We can't talk about reforms and change in education if there is no change in the classroom. Do your personal best.

*Change begins with YOU!*

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# PART VII
## Supplemental Readings

**A. CLIL**
**B. KRASHEN**
**C. VYGOTSKY**

## A. CLIL

David Marsh is one of the leading experts in CLIL philosopy. Following David's presentation at a Directors' Conference on 'The Impact of CLIL in Europe', he answered these questions.

***1. What is CLIL? Does it cover a single educational approach or many?***

DM: Content and Language Integrated Learning (CLIL) is an educational approach where some content learning (like a topic on global climate, or a subject) is taught in an additional language (such as English language in Korea). It is a single educational approach which involves very different models. In other words, the foundation is the same, but the way in which it is carried out differs – and this depends on what educators want to achieve in a given place and time. It is an innovation, but based on putting together long-standing chunks of good educational practice into special packages.

***2. What are the aims of CLIL?***

DM: The aims depend on the model used. These may be subtle, as in helping youngsters understand the point of learning a language and developing in the youngsters a positive 'can do' attitude towards themselves as language learners. This is crucial in places like Spain and Japan where English is often remote from the real lives of young people. They may be more obvious such as developing advanced language skills. They may be 'subliminal' in getting teachers to change teaching practice (content and language teachers), or socially-oriented, in boosting levels of harmony between inter-ethnic groups. In 2001, we carried out a research survey in Europe and were surprised by the range of aims.
These can be seen at www.clilcompendium.com

***3. What are the main advantages of CLIL?***

DM: Positive attitude changes in learners towards learning a language, and towards themselves as language learners. This is a profound advantage. Then there is the question – why? Why are the results so good? We are now thinking that this relates mainly to the emotional dimension of learners; the ways in which CLIL connects them to their own 'worlds' using multi-mode technology; and the impact on the brain when language learning becomes 'acquisitional', and not just 'intentional'.

***4. Does CLIL make bilingualism in mainstream education a realistic and achievable aim?***

DM: Yes, and tri-lingualism in some very special environments such as in Spain. Back in 1991, when we were exploring ways of giving foreign language learning a boost (in Europe), we faced a

problem. Certain languages invited excellent methodologies and materials (English) – whilst others were drab and boring for young people; and educational systems were reluctant to give language learning more time in the curriculum, and so on. And at that time we were toying with using the term Bilingual Education and not CLIL. But bilingual is a loaded word and is frequently understood differently across countries and educators. The question 'how long is a piece of string?' comes to mind when asked whether or not a person is bilingual. Partial language competence is a very important concept now in education, and with this in mind, it is possible to mainstream CLIL, and it is happening right now.

***5. What is the role of the students' first language in the CLIL classroom?***

DM: It is paramount – and when we look at the little research available we can see reports that exposure to CLIL enhances the first language. This is probably due to the development of metalinguistic awareness. But, remember that CLIL is not just 'teaching in a foreign language' – which is a trend surfacing all over the world with English. CLIL involves doing this using specific methodologies and expertise, and these accommodate the first language.

***6. How much or little of the curriculum needs to be taught in the target language for it to qualify as CLIL?***

DM: There is no minimum percentage – it is a question of what happens in the classroom. Small exposure to CLIL, e.g. English language lessons plus one subject (or much of one subject) taught through English can give surprisingly good results.

***7. What is the youngest age group to have been taught with CLIL? Has it been used with pre-schoolers?***

DM: Yes, but remember that good early language learning often follows the same principles as CLIL even if it is called 'language learning'. In primary and secondary, these principles may be put aside, and this is where the potential of CLIL kicks in.

***8. What are the implications for first language development?***

DM: It depends on which language and where. This is one reason why there are CLIL model variants. For example science and maths in English in Malaysia – now involving over 5m students, has invited a strong debate over potential damage to the Malay language. But back in the 1970s the same argument was raging – and it related to the complexity of concepts in Malay and English when approaching the sciences.

English is a powerful, viral language and in some parts of the world we can see how it acts as a 'killer language' (Tove Skuttnab-Kangas). But it is organic – and this gives it power. For a long time France has attempted, through centralised power, to control dimensions of French language creation and usage. This frequently doesn't work because people and languages are organic – language doesn't respond well to laws and directives.

CLIL accommodates both first and second language where possible. There is a problem with classrooms which comprises wide linguistic diversity in terms of first languages. But the first languages would be under threat in these cases, with or without CLIL. As I already mentioned we are getting very positive reports from some European countries that exposure to CLIL strengthens

the first language.

***9. To what extent has CLIL been adopted into the primary school curriculum?***
DM: There is much stress at present on early language learning. The boom of the last decade has meant many families purchasing early language exposure to English for their children. Some educational systems have responded to this, others have not. Primary, lower secondary, and vocational education, are fertile grounds for CLIL.

***10. How diverse has the application been in secondary schools?***
DM: Very diverse – from nearly 100% in English, through to 5%. The problems arise in higher secondary if examination systems do not recognise learning through a foreign language. Examination bodies act as gate-keepers which affect many types of educational innovation, including CLIL.

***11. Are there any examples of English-speaking countries adopting CLIL in mainstream education to promote language learning?***
DM: Canada is the classic with variants of immersion. Some bilingual education in the USA is close to CLIL. Australia, and now the UK are shifting towards CLIL for learning foreign languages. There is also discussion about CLIL as a concept to further support the teaching of English to migrant children in the UK.

***12. Do students need a particular level of English to attend a particular class or do teachers have to deal with mixed proficiency classes?***
DM: Teachers usually find themselves dealing with mixed-ability classes in terms of language proficiency, and other factors. This is one reason why CLIL methods reach out to cover a broad range of learning style preferences.

***13. Could a lack of proficiency result in a reduced understanding of the subject?***
DM: Yes, but this is the case with the first language. The use of constructivist methodologies, and scaffolding, helps to overcome this situation.

***14. Do students ever feel frustrated with their inability to communicate in the other language and to be themselves?***
DM: I'm sure this happens. I remember once being in a Tanzanian school where children caught speaking languages other than English were sent to stand under the 'punishment tree'. Likewise I recall a Canadian immersion class in which the adult teacher would not speak in the first language to very young pupils, but used a puppet whenever this became necessary. Each of these is highly undesirable. If you use force, then you will fail in the long-term, especially with the bulk of a student cohort.
When you look at good CLIL methods you will see 'trans-languaging' used, which is the systematic use of more than one language. This is one mechanism to diminish such frustration.

***15. What is the balance between content and language development in the design of a CLIL course?***

DM: Content drives CLIL. This is an essential concept, and it is one which often differentiates CLIL from approaches like content-based language education. The balance may differ according to the model, or even according to what is being done in a specific class. It is the blend that matters, not the time attributed to each.

***16. What other aspects need to be considered? How important are areas like methodology and culture?***

DM: These are both integral to course design.

***17. How is a CLIL subject assessed? Is the language or the subject knowledge assessed?***

DM: It depends – a variety of approaches are used depending on the main aims. In some cases there is only a formative assessment, and in others there are large-scale tests in the CLIL vehicular language.

***18. Have any universities adopted CLIL?***

DM: Universities are rarely exemplary change agents. There is now a lot of interest in CLIL in higher education across the world for three main reasons. Firstly, the often rapid adoption of English as medium of instruction for degree programmes is causing stress amongst higher education employees. Secondly, the need for these same people to be more pro-active in communicating through English and facing changes in the traditional way of working (e.g. joining international teams for research and development, and using the new technologies as means of communication); and thirdly, the demand of teacher education in CLIL. Does CLIL have any bearing on the first two points here? Yes, but only to some extent. It is very significant for teacher education, however, both initial and in-service. Then there is research on CLIL – a new journal has been founded at www.icrj.eu and major publishers now have research-based publications on CLIL in the pipeline.

***19. What are the driving forces behind these developments?***

DM: Globalization, globalization, globalization. It was Kofi Annan who said that arguing against globalization is like arguing against the laws of gravity – I think the same can now be said of CLIL. It is no longer an idea, or a fashion. It is a reality. The socio-economic drivers are very strong.

***20. Regarding teachers and lecturers, do they need to do a double degree (in their subject and the other language) to become CLIL professionals?***

DM: Such degrees are very rare, and often they don't actually mean that the person has CLIL expertise. You can learn two areas separately and not understand what the type of integration as found in CLIL really means. There is a range of ways of specializing in CLIL in addition to other forms of professional development which are increasingly available.

***21. Is there greater financial reward for teachers for these extra skills and knowledge?***

DM: Usually yes – either financial, or through less teaching hours. CLIL teachers are becoming

increasingly attractive and can command better remuneration conditions in certain countries.

***22. I imagine teachers that are not proficient in the other language may find themselves unable to discuss certain topics or respond to unplanned questions. What strategies are there for dealing with issues like this?***

DM: There is a whole range of strategies for handling this sort of situation – often done through team-work. Sometimes, this can actually mean teachers being involved with CLIL who have very limited proficiency in the target language, and who actually use that language in equally limited measure. Cooperation and teamwork can lead to very interesting outcomes in education.

***23. How do you see CLIL developing over the next ten years?***

DM: The uptake of English as medium of instruction will probably contract globally because of the economic situation. But I would guess that we will see expansion of CLIL in both the public and private sectors, particularly as people see the need to leverage quality.

***24. What opportunities does CLIL hold for an organization like International House or other editorial companies?***

DM: As I mentioned before CLIL may not be the 'ultimate communicative methodology' but it is going to become an ever-greater part of education in the future. This means the possibility of a range of opportunities for major language providers like International House.

Frankly, I'm surprised that this hasn't been picked up on earlier. One reason is probably because CLIL is not an off-the-shelf solution – at the start it is messy – but then so are most forms of breakthrough innovation. I was trained at International House London in the early days of 106 Piccadilly. IH was at the forefront of languages innovation then – is it still?

One message I gave at the IH conference in Dublin (2008) was how this opens opportunities for an organisation like International House. The shift towards teaching through the medium of English is massive, and is not likely to diminish too much with the current economic collapse. There is great potential for language education organizations like IH to forge closer links with subject teaching providers, and carve out new markets.

***25. What can teachers do to find out more about CLIL?***

Onestopclil.com is very good for information and materials. www.ccn-clil.eu is soon going to be very good for professional networking. www.clilconsortium.jyu.fi is a small site with information on some of the key experts working now on CLIL.

DAVID MARSH:

David Marsh has worked on multilingualism and bilingual education since the 1980s. Now based in Finland, he has extensive experience of teacher development, capacity-building, research and consultancy in a range of different countries in Africa, Europe, and Asia.

He was part of the team which conducted groundwork leading to the launch of the term CLIL in 1994.

He is currently leading an international research team which examines the impact of multilingualism on creativity. During 2008-2010, he acted as Strategic Director for CCN (Europe), and handles

various educational development and research initiatives in the European Union and East Asia.

## B. KRASHEN

**Stephen Krashen's Theory of Second Language Acquisition**

*"Language acquisition does not require extensive use of conscious grammatical rules, and does not require tedious drill."*

*"Acquisition requires meaningful interaction in the target language - natural communication - in which speakers are concerned not with the form of their utterances but with the messages they are conveying and understanding."*

*"The best methods are therefore those that supply 'comprehensible input' in low anxiety situations, containing messages that students really want to hear. These methods do not force early production in the second language, but allow students to produce when they are 'ready', recognizing that improvement comes from supplying communicative and comprehensible input, and not from forcing and correcting production."*

*"In the real world, conversations with sympathetic native speakers who are willing to help the acquirer understand are very helpful."*

Stephen Krashen

**Introduction**

Dr. Stephen Krashen (University of Southern California) is an expert in the field of linguistics, specializing in theories of language acquisition and development. Much of his recent research has involved the study of non-English and bilingual language acquisition. During the past 20 years, he has published well over 100 books and articles and has been invited to deliver over 300 lectures at universities throughout the United States and Canada.

This is a brief description of Krashen's widely known and well accepted theory of second language acquisition, which has had a large impact in all areas of second language research and teaching since the 1980s.

Description of Krashen's Theory of Second Language Acquisition

***Krashen's theory of second language acquisition consists of five main hypotheses:***

1. Acquisition-Learning hypothesis
2. Monitor hypothesis
3. Natural Order hypothesis
4. Input hypothesis
5. Affective Filter hypothesis

1. The Acquisition-Learning distinction is the most fundamental of all the hypotheses in Krashen's

theory and the most widely known among linguists and language practitioners.
According to Krashen there are two independent systems of second language performance: 'the acquired system' and 'the learned system'.
The 'acquired system' or 'acquisition' is the product of a subconscious process very similar to the process children undergo when they acquire their first language. It requires meaningful interaction in the target language - natural communication - in which speakers are concentrated not in the form of their utterances, but in the communicative act.

The 'learned system' or 'learning' is the product of formal instruction and it comprises a conscious process which results in conscious knowledge 'about' the language, for example knowledge of grammar rules.
According to Krashen 'learning' is less important than 'acquisition'.

2. The Monitor hypothesis explains the relationship between acquisition and learning and defines the influence of the latter on the former. The monitoring function is the practical result of the learned grammar.
According to Krashen, the acquisition system is the utterance initiator, while the learning system performs the role of the 'monitor' or the 'editor'.
The 'monitor' acts in a planning, editing, and correcting function when three specific conditions are met:

- The second language learner has sufficient time at his/her disposal
- He/she focuses on form or thinks about correctness
- He/she knows the rule.

It appears that the role of conscious learning is somewhat limited in second language performance. According to Krashen, the role of the monitor is - or should be - minor, being used only to correct deviations from 'normal' speech and to give speech a more 'polished' appearance.

Krashen also suggests that there is individual variation among language learners with regard to 'monitor' use. He distinguishes those learners that use the 'monitor' all the time (over-users); those learners who have not learned or who prefer not to use their conscious knowledge (under-users); and those learners that use the 'monitor' appropriately (optimal users).

An evaluation of the person's psychological profile can help to determine to what group they belong. Usually extroverts are under-users, while introverts and perfectionists are over-users. Lack of self-confidence is frequently related to the over-use of the 'monitor'.

3. The Natural Order hypothesis is based on research findings (Dulay and Burt, 1974; Fathman, 1975; Makino, 1980 cited in Krashen, 1987) which suggested that the acquisition of grammatical structures follows a 'natural order' which is predictable.
For a given language, some grammatical structures tend to be acquired early while others late.

This order seemed to be independent of the learners' age, the first language, (L-1) background, and conditions of exposure. Although the agreement between individual acquirers was not always 100% in the studies, there were statistically significant similarities that reinforced the existence of a Natural Order of language acquisition.

Krashen, however, points out that the implication of the natural order hypothesis is not that a language program syllabus should be based on the order found in the studies.
In fact, he rejects grammatical sequencing when the goal is language acquisition.

4. The Input hypothesis is Krashen's attempt to explain how the learner acquires a second language. In other words, this hypothesis is Krashen's explanation of how second language acquisition takes place.
So, the Input hypothesis is only concerned with 'acquisition', not 'learning'. According to this hypothesis, the learner improves and progresses along the 'natural order' when he/she receives second language 'input' that is one step beyond his/her current stage of linguistic competence.
For example, if a learner is at a stage 'i', then acquisition takes place when he/she is exposed to 'Comprehensible Input' that belongs to level 'i + 1'.
Since not all of the learners can be at the same level of linguistic competence at the same time, Krashen suggests that natural communicative input is the key to designing a syllabus, ensuring in this way that each learner will receive some 'i + 1' input that is appropriate for his/her current stage of linguistic competence.

5. Finally, the fifth hypothesis, the Affective Filter hypothesis, embodies Krashen's view that a number of 'affective variables' play a facilitative, but non-causal, role in second language acquisition.
These variables include: motivation, self-confidence and anxiety.
Krashen claims that learners with high motivation, self-confidence, a good self-image, and a low level of anxiety are better equipped for success in second language acquisition.
Low motivation, low self-esteem, and debilitating anxiety can combine to 'raise' the affective filter and form a 'mental block' that prevents comprehensible input from being used for acquisition.
In other words, when the filter is 'up' it impedes language acquisition. On the other hand, positive affect is necessary, but not sufficient on its own, for acquisition to take place.

***The Role of Grammar in Krashen's View***

According to Krashen, the study of the structure of the language can have general educational advantages and values that high schools and colleges may want to include in their language programs. It should be clear, however, that examining irregularity, formulating rules, and teaching complex facts
about the target language is not language teaching, but rather is "language appreciation" or linguistics.

The only instance in which the teaching of grammar can result in language acquisition (and

proficiency) is when the students are interested in the subject and the target language is used as a medium of instruction.

Very often, when this occurs, both teachers and students are convinced that the study of formal grammar is essential for second language acquisition, and the teacher is skillful enough to present explanations in the target language so that the students understand.

In other words, the teacher talk meets the requirements for comprehensible input and perhaps with the students' participation the classroom becomes an environment suitable for acquisition. Also, the filter is low in regard to the language of explanation, as the students' conscious efforts are usually on the subject matter, on what is being talked about, and not the medium.

This is a subtle point. In effect, both teachers and students are deceiving themselves.
They believe that it is the subject matter itself, the study of grammar, that is responsible for the students' progress, but in reality their progress is coming from the medium and not the message.
Any subject matter that held their interest would do just as well.

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## C. Vygotsky´s Social Development Theory

Vygotsky's Social Development Theory is the work of Russian psychologist Lev Vygotsky (1896-1934), who lived during the Russian Revolution. Vygotsky's work was largely unknown to the West until it was published in 1962.
Vygotsky's theory is one of the foundations of constructivism.
It asserts three major themes:

**1. Social interaction (SI)**

SI plays a fundamental role in the process of cognitive development. In contrast to Jean Piaget's understanding of child development (in which development necessarily precedes learning),
Vygotsky felt social learning precedes development. He states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological)." (Vygotsky, 1978).

**2. The More Knowledgeable Other (MKO).**
The MKO refers to anyone who has a better understanding or a higher ability level than the learner, with respect to a particular task, process, or concept. The MKO is normally thought of as being a teacher, coach, or older adult, but the MKO could also be peers, a younger person, or even computers.

**3. The Zone of Proximal Development (ZPD).**
The ZPD is the distance between a student's ability to perform a task under adult guidance and/or with peer collaboration and the student's ability to solve the problem independently. According to Vygotsky, learning occurred in this zone.
Vygotsky focused on the connections between people and the sociocultural context in which they act and interact in shared experiences (Crawford, 1996). According to Vygotsky, humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially children develop these tools to serve solely as social functions, ways to communicate needs. Vygotsky believed that the internalization of these tools led to higher thinking skills.

**Vygotsky and Social Cognition**
Definition:
The social cognition learning model asserts that culture is the prime determinant of individual development. Humans are the only species to have created culture, and every human child develops in the context of a culture. Therefore, a child's learning development is affected in ways large and small by the culture–including the culture of family environment–in which he or she is enmeshed.

**Discussion**
***Culture makes two sorts of contributions to a child's intellectual development.***
First, through culture children acquire much of the content of their thinking, that is, their knowledge.
Second, the surrounding culture provides a child with the processes or means of their thinking, what Vygotskians call the tools of intellectual adaptation. In short, according to the social cognition learning model, culture teaches children both what to think and how to think.

Cognitive development results from a dialectical process whereby a child learns through problem-solving experiences shared with someone else, usually a parent or teacher but sometimes a sibling or peer.

Initially, the person interacting with child assumes most of the responsibility for guiding the problem solving, but gradually this responsibility transfers to the child.

Language is a primary form of interaction through which adults transmit to the child the rich body of knowledge that exists in the culture.

As learning progresses, the child's own language comes to serve as her primary tool of intellectual adaptation. Eventually, children can use internal language to direct their own behavior.

Internalization refers to the process of learning–and thereby internalizing–a rich body of knowledge and tools of thought that first exist outside the child. This happens primarily through language.

A difference exists between what a child can do on his/her own and what the child can do with help. Vygotskians call this difference the Zone of Proximal Development.

Since much of what a child learns comes from the culture around him/her and much of the child's problem solving is mediated through an adult's help, it is wrong to focus on a child in isolation. Such focus does not reveal the processes by which children acquire new skills.
Interactions with surrounding culture and social agents, such as parents and more competent peers, contribute significantly to a child's intellectual development.

**How Vygotsky Impacts Learning:**

***Curriculum***
Since children learn much through interaction, curricula should be designed to emphasize interaction between learners and learning tasks.
***Instruction***
With appropriate adult help, children can often perform tasks that they are incapable of completing on their own. With this in mind, scaffolding–where the adult continually adjusts the level of his or her help in response to the child's level of performance–is an effective form of teaching.

Scaffolding not only produces immediate results, but also instills the skills necessary for independent problem solving in the future.

***Assessment***
Assessment methods must take into account the Zone of Proximal Development. What children can do on their own is their level of actual development and what they can do with help is their level of potential development.
Two children might have the same level of actual development, but given the appropriate help from an adult, one might be able to solve many more problems than the other. Assessment methods must target both the level of actual development and the level of potential development.

**Additional Readings**
*Vygotsky, L.S. (1962). Thought and Language.* Cambridge, MA: MIT Press. (Original work published 1934)

*Vygotsky, L.S. (1978). Mind in Society: The Development of Higher Psychological Processes.* Cambridge, MA: Harvard University Press.

*A paper by James Wertsch and Michael Cole titled "The Role of Culture in Vygotskyean-informed psychology".*
This paper gives an accessible overview of the main thrust of Vygotsky's general developmental framework and offers a contrast to the Piagetian approach.

*THANK YOU.*
*THIS IS THE END OF THE BOOK, BUT NOT THE END OF YOUR CURIOSITY, NOR YOUR GROWTH.*
*CONTINUE GROWING INTELLECTUALLY, WITH RESEARCH AND READINGS.*
*ENJOY!*