

# Meta<sup>x</sup> Influence Glossary

**Ability grouping for gifted students:** Students deemed to be gifted are grouped together into a class and taught separately from other students.

**Acceleration programs:** These programs allow students to reduce the time spent of a year's curriculum expectations by skipping a year, telescoping the curriculum coverage, and going deeper on fewer curriculum topics. Three types of achievement goals have been recommended: a learning or task involvement goal focused on the development of competence and task mastery (an approach orientation), a performance or ego involvement goal directed toward attaining favorable judgments of competence (also an approach orientation), and a performance or ego involvement goal aimed at avoiding unfavorable judgments of competence (an avoidance orientation).

**Achieving Motivation and Approach:** This motivation involves students being strategic in their motivation – choosing when to be surface and understand the knowledge, when to go deep and investigating relations, when to master and when to perform to the satisfaction of others (teachers, peers, family).

**ADHD:** Attention Deficit Hyperactivity Disorder is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity. It affects about 5 to 7 percent of children when diagnosed according to the criteria established by the Diagnostic and Statistical Manual of Mental Disorders. Students diagnosed with ADHD often exhibit other, related learning disorders, such as reading disorders or deficits in mathematics.

**ADHD treatment with drugs:** Currently, 3 to 5 percent of schoolchildren in the United States take some form of stimulant drug to treat Attention Deficit Hyperactivity Disorder or a related condition. This widespread use of pharmaceuticals has been criticized for attempting to solve with drugs problems that are social and cultural: limited unstructured time in schooling, increased standardized testing and homework, and greater demands for quiet focus by young children. Defenders of pharmaceuticals have countered that such drugs provide benefits to parents, teacher, and most of all children, for whom such medication is necessary to success in an academic setting.

**Adjunct Aids:** These materials, such as pictorial displays, animations, and “enhanced” text (with bold-faced and italicized typefaces, for instance) are placed alongside the text, as adjunct aids to improve understanding.

**Adopted v. non-adopted children:** These studies compare the performance of children who have been adopted with those not adopted.

**Advance organizers:** These organizational tools communicate to students how their current knowledge and skills will enable them to acquire new knowledge or to master skills in a new domain (e.g., math, science, social studies, reading, etc.)

**After-school programs:** After-school programs have been created to solve three social problems: to prevent students from spending long periods of time home alone after school, to provide students struggling academically with more time to learn important elements of the curriculum, and to reduce crime and victimhood during after-school hours. The National Household Education Survey Program (2006) reported that 20 percent of U.S. students in Grades K–8 attended an after-school program, and studies have demonstrated that after-school programs focused on reading and mathematics have improved attendees' academic performance in those areas.

**Aggression/violence:** In one recent study, 14 percent of male and 13 percent of female students in the United States reported that they felt unsafe while travelling to and from school, while 41 percent of male and 56 percent of female students feared violence while in school. Research has suggested that educational environment is a major contributing factor to school violence. Violence is more prevalent in larger schools than in smaller ones, and an over-dependence on law enforcement, the use of invasive searches, and the use of undercover agents have all been shown to increase aggression and violence in students. Schools with clear, fair, and unbiased rules produce the least violence among students.

**Alternative assessment methods:** The more usual assessment methods involve written summative or end of course/series of lessons. Alternative methods include oral presentations, progress monitoring, and performance methods.

**Anger:** Anger in learning can occur when students face difficulties or blocks moving towards a desired goal and when students see the demands or task as unfair

**Anxiety:** An emotional state or trait that is variably related to academic performance, potentially influencing that performance positively or negatively. The most critical aspect is the coping strategies that children can be taught to deal with anxiety.

**Appropriately challenging goals:** A necessary precondition for meaningful learning, appropriately challenging goals provide the preconditions for student engagement and the development of intrinsic motivation. Numerous scholars have suggested that students thrive most when teachers clearly describe the ultimate goals of a particular course of instruction, and when they formulate such goals to be challenging but achievable. The Goldilocks's principle of challenge is not too hard, not too easy, and not too boring.

**Aptitude-treatment interactions:** This occurs when a particular instructional strategy (or treatment) has different degrees of effectiveness for specific learners depending on the individual characteristics (or aptitudes) of those learners. It is the basis for theories of individual differences, and it is hard to find systematic evidence to support the presence of ATIs.

**Attitude towards content domains:** A student's "attitude to content domains" refers to a student's attitudes to particular content domains (e.g., math, science, social studies, reading, etc.). It may be that these attitudes are as much a function of enhanced learning in the domain; that is positive attitudes follow enhanced learning and not necessarily the converse.

**Audio-Visual Methods:** Technologies projecting sound and image are often used in classrooms as a means of communicating information to students, and their advocates suggest that such technologies enhance the ability of students to retain information in their long-term memories. More recently, however, some scholars have expressed concern that many students (especially second-language learners) struggle to process information transmitted through multiple forms of media simultaneously. Others have suggested that these technologies can stymie the productive, pedagogical exchange between student and teacher by turning all attention to the technology itself.

**Autism:** Children with this developmental disorder have difficulties with social interaction and communication, and they often exhibit repetitive behavior. Educational researchers stress that autistic children are best served by educational environments that are highly organized and provide clear visual cues to help overcome difficulties in communication.

**Background Music:** This relates to playing background music while students are working. Most often it involves low-decibel, orchestral/non popular/no lyric background music with an intention to decrease pulse rate, improve classroom behavior, and improve performance on learning tasks.

**Behavioral intervention programs:** These programs, are typically part of an Individualized Education Program (or IEP), are designed to modify student behavior in the classroom.

- Belonging:** The extent to which students feel respected, included, accepted, and encouraged by others in the social environment of school. Also called “school connectedness,” this affective relationship to the culture of school has been shown to shape a student’s emotional, behavioral, and cognitive engagement with schooling.
- Bilingual programs:** Contrasted with “language submersion” programs, bilingual programs include a language-minority student’s home language in school instruction.
- Boredom:** While earlier researchers cited under-stimulation as the cause of boredom in students, the more recent “attentional theory” of boredom postulates that boredom results from a deficit in attention—often the result of a student’s belief in the irrelevance of the subject at hand. When surveyed, however, students often cite proximate causes of boredom (such as an over-use of PowerPoint slides; tasks of low challenge; or when asked to remain passive and listen to others, especially, the talk and talk). Students often cope with boredom by daydreaming, texting, or turning to social media.
- Breast feeding:** While researchers have concluded that breast feeding has numerous advantages for children’s health, no correlation has been found between a child’s IQ and whether she or he was breast fed. Researchers theorize that the ostensible link between breast feeding and later-life academic success, hypothesized in earlier decades, could be the result of other factors: the mother’s level of education and IQ, the child’s social class, and the family’s relative wealth.
- Building Quality:** The quality of the school buildings.
- Bullying:** Bullying is an ongoing and deliberate misuse of power in relationships through repeated verbal, physical, and/or social behavior that intends to cause physical, social, and/or psychological harm. It can occur in person, online, by individuals, or by groups.
- Career interventions:** A form of counseling typically designed to provide those at risk of joblessness with guidance on how to navigate short-term and long-term career challenges. Career interventions are designed to increase “exploratory” thinking about future career prospects and to make career decisions based upon guided research.
- Charter schools:** Schools that receive government funding but are independent of the public school system, and sometimes privately run. In some countries they are called Academics, Trust schools and they typically share more freedoms from the government regulations that apply to most schools.
- Chess instruction:** Invented in the Indian subcontinent in the seventh century and brought to Europe in the ninth century, Chess has long been regarded as both a game and a tool of cognitive discipline and instruction.
- Classroom discussion:** A form of instruction in which students are invited to speak about the topic at hand. It involves much more than a teacher asking a class a question, then another, etc., but involves students discussing with each other, often prompted from an open and not closed set of questions.
- Classroom management:** The process by which teachers maintain in their classrooms an environment of order and respect. Effective classroom management techniques depend on planning and prevention: the orderly arrangement of the physical space prior to the arrival of students; the establishment of fair and reasonable rules; the advance, moment-by-moment planning of instruction; clear and direct communication; and advance planning for the management of students.
- Clear goal intentions:** When students link clear goal intentions to “implementation intentions”—or plans to overcome expected obstacles—they are more likely to achieve their goals.

- Clickers:** A form of audience response system often used in classrooms to enable all students to respond instantly to questions put to the whole group. Often the responses of the students can be shown to the whole class, and leads to discussion about right and wrong answers, and to reteaching of concepts least understood by the class.
- Co-/team-teaching:** A practice in which pairs or groups of teachers collaborate on the delivery of course material. This does not mean teachers taking turns teaching, which is why this method often fails to show an impact.
- Coaching:** Jim Knight (2006) defines coaching as “a nonevaluative, learning relationship between a professional developer and a teacher, both of whom share the expressed goal of learning together, thereby improving instruction and student achievement.” There are many variants of coaching methods but typically involve an outside person working with a teacher on a specific set of skills.
- Coding:** Teaching students the skills of computer coding.
- Cognitive behavioral programs:** Cognitive behavioral programs were founded on the notion that cognitive deficits are learned rather than inherent, and that they can be unlearned in a therapeutic environment. The aim is to learn practical self-help strategies to replace unhelpful habits of thinking, feeling, and behaving.
- Cognitive task analysis:** A cluster of methods for studying and describing reasoning and knowledge, and for providing procedures for the systematic study of key cognitive drivers of the behavior of people engaged in particular tasks. Some educational researchers have suggested that cognitive task analysis is a useful tool for shaping instructional approaches for inexpert students, who require guidance through the learning process.
- Collaborative learning:** An educational practice through which two or more people collaborate on a learning task, whether by following a course of study or by attempting to solve a problem. This practice might involve face-to-face or electronically mediated interactions, and the labor of learning may or may not be divided in a systematic way.
- Collective teacher efficacy:** The shared belief by a group of teachers in a particular educational environment that they have the skills to positively impact student outcomes.
- College halls of residence:** Also known as residence halls, these are associated with universities.
- Competitive vs. individualistic learning:** There have been many programs comparing competitive scenarios compared to allowing students to work alone.
- Comprehensive reading programs:** These reading programs seek to harmonize the entire reading curriculum, thereby teaching reading more effectively over the long term. In particular, comprehensive approaches attempt to align materials, procedures, personnel, and evaluations.
- Concentration, persistence, engagement:** Engagement has long been regarded as a desired outcome for schooling and a predictor of achievement and lowered educational risk. Researchers have theorized that cognitive engagement is the ultimate outcome of a student’s ability to concentrate on a task and to persist despite challenges. Some researchers caution, however, that engagement is only one potential indicator of student achievement.
- Concept mapping:** The creation of graphic representations of course content. This practice derives from American psychologist David Ausubel’s theory that concepts can be arranged hierarchically, and that students learn best by arranging new information in relation to information they have already mastered. Key to concept mapping is that students themselves are taught to create the learning tool by which they then will master course material.

- Conceptual change programs:** Teaching for conceptual change involves uncovering students' preconceptions about a particular topic and using various techniques to help students change their conceptual framework. Conceptual change theory depends on two assumptions: that teachers and learners share a "conceptual ecology," or an environment in which particular assumptions about learning predominate, and that change is only possible when intelligible, plausible, and useful alternatives to core assumptions are presented to teachers and learners.
- Conjoint Reading Programs:** These programs are about the influence of focusing on reading on other curricula content, and the effect of writing on reading.
- Consolidating/merging Schools:** Consolidation, or merging, of schools or school districts.
- Constructivist Teaching:** Constructivist teaching involves providing students with learner-centered, active instruction, where students explore ideas, propositions, explanations, solutions and take subsequent actions.
- Cooperative learning:** A pedagogical strategy through which two or more learners collaborate to achieve a common goal. Typically, cooperative learning programs seek to foster positive interdependence through face-to-face interactions, to hold individual group members accountable for the collective project, and to develop interpersonal skills among learners. Cooperative learning programs aim to enable learners to engage more complex subject matter than students would typically be able to master, and such an approach has been recommended for both gifted and remedial learners.
- Cooperative vs. competitive learning:** Cooperative learning (in which students work together to solve problems) has been shown to be more effective than competitive learning (in which students independently solve problems) in nearly all cases, although some studies disagree about the relative advantage to cooperative learning programs.
- Cooperative vs. individualistic learning:** Greater social integration between students during the learning process has been shown to increase students' integration into the academic environment. In contrast to individualistic learning, in which students are responsible for their own mastery of the subject matter, cooperative learning environments call upon students to interact with a fellow student or with a group, with each pair or group member responsible for the learning of the others.
- Corporal punishment in the home:** The use of corporal punishment, such as spanking or hitting with objects, is associated with emotional and behavioral adjustment problems in children. These associations are strongest for children who experience high levels of punishment, who are impulsive, or who do not experience a warm and supportive family environment.
- Counseling effects:** Students can be referred to counsellors, who review the affect, the beliefs, and the social context as seen through the eyes of the student. The beneficial effects of counseling are aimed towards student adjustment, retention, and academic success; however, counseling continues to be stigmatized by many students—reducing overall rates of adoption and completion.
- Creativity programs:** There are many creative thinking programs: Creative Problem-Solving Programs, the Productive Thinking Program, the Purdue Creative Thinking Program, New Directions in Creativity, and the Torrance Creative Scholars Program. Such programs aim to impact students' divergent thinking abilities, such as number of responses, flexibility of response categories, originality of responses, and elaboration of responses.
- Critical thinking:** A set of cognitive skills—including analysis, inference, evaluation, interpretation, deductive reasoning, and inductive reasoning—that collectively enable a thinker to reasonably decide who and what to believe.

## Definitions

- Cross-laterality:** This occurs when a person's hand, eye, foot, or ear dominances are not consistently right- or left-sided. This phenomenon—known as cross-laterality or crossed laterality, or ambidextrous.
- Curiosity:** Curiosity relates to the urge to explain the unexpected, to resolve uncertainty, or the urge to know more.
- Decreasing disruptive behavior:** Disruptions by students often aimed to exert a negative influence on the greater classroom environment.
- Deep motivation and approach:** Deep motivation and approach functions occur when students want a mastery, deeper understanding, or high degree of investment to have a fuller understanding overall of the topic.
- Deliberate practice:** A learning technique that involves extensive engagement in relevant practice activities in order to improve particular aspects of performance. Deliberate practice often refers to challenging, effortful repetition, often adjusted through feedback. While regular practice can include many repetitions, deliberate practice requires focused attention and is conducted with the specific goal of improving performance.
- Depression:** A mental health disorder that impairs daily functioning by depressing mood and reducing interest in activities.
- Desegregation:** A comprehensive, legally enforced program for eliminating the barriers that kept schools racially homogeneous. In the United States, attempts at desegregation were primarily the result of three court rulings: *Brown v. Board of Education of Topeka* (347 U.S. 483, 1954); *Green v. County School Board of New Kent* (391 U.S. 430, 1968); and *Swann v. Charlotte-Mecklenburg Board of Education* (402 U.S. 1, 1971). Desegregation aims to equalize educational opportunities in the United States for racial minorities, particularly for African Americans.
- Detracking:** An effort to organize students into academically mixed classrooms, reversing previous efforts to "track" students into academically different groups: honors, college preparatory, standard, and remedial courses, for instance.
- Dialect use:** A student's use of a non-majority dialect. The now well-known "Ann Arbor decision" (*Martin Luther King Junior Elementary School Children et al. v. Ann Arbor School District*, 1979) found that a school district must consider a student's linguistic and cultural background in instructional programming, but research on dialect use was limited at the time of the decision.
- Differentiation:** Differentiation refers to a wide variety of teaching techniques and lesson adaptations that educators use to instruct a diverse group of students. It can involve different activities to different groups of students, recognition of multiple pathways and time to complete the tasks.
- Direct instruction:** Direct instruction refers to instructional approaches that are structured, sequenced, and led by teachers. Direct instruction requires teachers to have clear learning intentions and success criteria, building a commitment and engagement among the students in the learning task; uses modeling and checking for understanding in their teaching; and engages in guided practice so that every student can demonstrate his or her grasp of new learning by working through an activity or exercise under the teacher's direct supervision.
- Discovery-based teaching:** A practice in which students formulate clear, testable hypotheses, which they then test in a laboratory or workshop setting through direct experience. Often equated to project-based teaching or play-based teaching.
- Distance education:** A mode of education in which students and instructors are separated by space and/or time from the teacher.



- Diversity courses:** Such courses aim to make students aware of and knowledgeable about key threshold concepts, such as racism. These courses aim for knowledge acquisition, professional socialization, and the development of racial or cultural awareness.
- Diversity of student body:** Where there is high representation of various racial, cultural, and socio-economic students within the class or school.
- Drama Arts Programs:** Programs based on drama and the arts.
- Early intervention in the home:** A practice by which child development professionals make home visits to support families with infants and toddlers. Such interventions are designed to promote school readiness by improving the child's physical well-being, as well as her or his motor, emotional-social, language, and cognitive development.
- Early intervention types:** These programs include parent education programs, early interventions in the home with families, and family-based literacy programs.
- Early years non-cognitive skills:** Non-cognitive skills include conscientiousness, perseverance, teamwork, social conformity, engagement, and self-efficacy.
- Effects of testing:** This refers mainly to the effects of standardized assessments, national or state-wide mandated assessments, or overall assessment in the class.
- Effort management:** The process by which a learner uses tactics—such as mood management, self-talk, persistence, self-reinforcement, or attribution of success to effort—in order to achieve a particular goal.
- Elaboration and organization:** These strategies enable learners to commit information and skills to memory. In combination, practices of elaboration (such as note-taking or forming questions about course material) are often combined with practices of organization (such as outlining or information mapping).
- Elaborative interrogation:** A questioning technique that calls for readers to generate an explanation for an explicitly stated fact by asking questions such as: "Why is this true?"; "Why does this make sense?"; or even simply "Why?" Unlike more typical textbook questions—which ask "what" instead of "why"—elaborative interrogation has been shown to promote learning from texts.
- Emotional Intelligence:** Emotional intelligence refers to skills in regulation, management, and expression of emotion-related information as well as self-control and self-motivation.
- Engaged vs. disengaged fathers:** While fathers' mean levels of overall involvement in the education of children tends to be lower than that of mothers, their involvement nonetheless influences their children's academic achievement just as strongly as the involvement of mothers.
- Enjoyment:** The relation between the enjoyment or pleasure in undertaking activities and learning.
- Enrichment programs:** Programs that provide gifted and talented students with activities that add to or go beyond the existing curriculum. They may occur in the classroom or in a separate setting such as a pull-out program.
- Exercise/relaxation:** This involves physical activity and relaxation exercises usually aimed to reduce stress levels or maintain focus on tasks.
- Explicit teaching strategies:** Explicit instruction is characterized by a series of supports or scaffolds, whereby students are guided through the learning process with clear statements about the purpose and rationale for learning the new skill, clear explanations and demonstrations of the instructional target, and supported practice with feedback until independent mastery has been achieved. Explicit teaching strategies typically involve instruction, guided practice, and teaching to mastery.

**Exposure to reading:** This relates to exposure to reading and concepts about print and stories at home and at school.

**Extracurricular activities:** Participation in extracurricular activities such as sports, culture, music, arts, clubs, or other within-school activities.

**Face time and social media:** Various forms of social media are being used as pedagogical tools. They can also be used to assist in homework, seeking knowledge, but there can be privacy and negative consequences.

**Family on welfare/state aid:** There are many forms of welfare and state aid to assist families.

**Family structure:** Families can include one, two, or more parents (some cultures children are brought up in multiple family situations), LGBTQ+ parents, parents who work or stay at home with their children.

**Feedback:** Feedback has for more than a century been regarded as critical to skill and knowledge acquisition, and yet debates have emerged about the most effective means of providing feedback. As critical is the variability in feedback influences. Feedback in the classroom can be defined as “information allowing a learner to reduce the gap between what is evident currently and what could or should be the case”. Specifically, feedback is information provided by an agent (e.g., teacher, peer, book, parent, self/experience) regarding aspects of one’s performance or understanding that reduces the discrepancy between what is understood and what is aimed to be understood.

**Feedback (from Students re quality):** Student evaluations of teachers

**Feedback (from Tests):** Feedback given based on testing

**Feedback (Reinforcement and cues):** Feedback in terms of reinforcement (positive and negative) and cues to advance to next steps in learning

**Feedback (Self):** Feedback about the self, including praise.

**Feedback (Tasks & Processes):** Feedback aimed more at improving the content or facts or ideas

**Feedback (Technology):** The use of technology to provide feedback

**Feedback (Timing):** The timing of feedback - immediate or delayed

**Field independence:** A cognitive style first described by Herman Witkin in 1949. A field independent learner is interested in abstract subject matter, learns individualistically, and thinks through problems impersonally. Such a learner is contrasted with a “field dependent” learner, who is more socially oriented, better able to discern the feelings of others, more dependent on others for feedback, and more in need of externally defined objectives.

**Finances:** The effect of financial inputs by government, parents, philanthropy on student achievement. The finances could be total amount, or broken into costs related to instruction (e.g. teacher salaries and instructional supplies, capital investment, professional learning costs). The emphasis is not only on the notion of “does money make a difference?” but on “how does money make a difference?” NB most of these studies have been conducted in well-resourced nations or school systems. Different effects are likely to be evident in nations with fewer resources.

**Financial Programs:** The implementation of programs to increase the financial literacy of students.



- Flipped classrooms:** An educational technique in which traditional classroom activities (such as lecture) are held at home or before the class, often via pre-recorded video or audio presentations, which prepares the students for more interactive, discovery, questioning, and engagement in active learning activities in the classroom itself.
- Foreign languages:** This can include the impact of learning other languages on the native language, or on other subjects in the native language.
- Formative Evaluation:** This involves providing instruction or feedback during the lesson rather than at the end (summative) of a lesson or series of lessons. As Bob Stake noted, when the cook tastes the soup, it is formative evaluation; when the guests taste the soup, it is summative evaluation.
- Frequent testing:** The use of frequent (more often) low-stakes testing aimed at improving learning outcomes of students often via motivating study habits, retention of knowledge, and engagement.
- Friendships:** The role friends can play to the social and emotional well-being, build trust to work together, and provide social status in a classroom.
- Frustration:** Frustration can be seen as a blend of anger and disappointment
- Full- vs. pre-term low birth weight:** Low birth weight is a result of preterm birth (short gestation <37 completed weeks), intrauterine growth restriction (also known as fetal growth restriction), or both. The term low birth weight typically refers to an absolute weight of <2,500 g regardless of gestational age.
- Gaming simulations:** The use of games or simulations to augment or replace traditional teaching.
- Gender (male-female):** The difference for males and females (in all cases, regardless of the direction in the original meta-analysis, all are converted to male-female effects). While there are other notions of gender, so far, all meta-analyses have compared male and female students.
- Goal commitment:** A person's determination to achieve a particular goal is most important when the goal is both specific and difficult to accomplish. Students with higher goal commitment have been found to be more likely to invest time and energy in studying, and to use additional strategies to achieve deep knowledge of the subject under study. Students commit to self-set goals more readily than to assigned goals, and research has indicated that instructor involvement in goal setting increases goal commitment among students pursuing group or team projects.
- Grant Aid:** Grant-in-aid is money provided to students to undertake courses, complete schooling, and related education activities.
- Grit:** A higher-order personality trait that is theorized to predict success and performance and has been defined as passion and perseverance for long-term goals. It overlaps with conscientiousness and perseverance.
- Growth vs. fixed mindsets:** Children with a growth mindset believe that they can develop their abilities through study and practice, while children with a fixed mindset believe that they have a certain amount of innate ability that cannot be altered.
- Happiness:** When we are happy then we are more open to experiences, more likely to take on challenges, and we are more ideally situated to "broaden and build."
- Head start programs:** Created in 1965 during the so-called "War on Poverty," and reauthorized in 1994 as Early Head Start (EHS), this program provides comprehensive educational support to three—and four-year-old children in the United States.

- Help seeking:** An adaptive process whereby a person seeks external support for an academic or mental health problem. In the context of schooling, help-seeking is regarded as a self-regulating and proactive strategy that enables students to rely on others to help navigate the ambiguity and difficulty of the learning process. Effective help seeking requires students to develop metacognitive skills (to think about their learning process) and a positive self-concept.
- Home environment:** “Home environment” comprises several interrelated material and interpersonal factors, including learning materials, language stimulation, caregiver responsivity, academic stimulation, behavioral modelling, acceptance, physical safety, and more.
- Home visiting:** Generally, a practice to bring childhood development professionals into the homes of young children in an effort to shape caregiver behavior and improve the home environment.
- Home-school connection programs:** These programs involve using computer and telecommunication technologies to forge greater home-school connections; information about homework, schedules, or progress in school.
- Homework:** Schoolwork that students are asked to complete at home.
- Hope:** An optimistic state of mind that is based on an expectation of positive outcomes.
- Humor:** The use of humor in the class to facilitate positive bonds, a safe environment, and enhance teacher-student relations.
- Illness:** Chronic illnesses, such as iodine deficiency or asthma, or chronic physical diseases, such as cerebral palsy and spina bifida. Also includes diabetes, asthma, brain injury, cleft lip, or sickle cell disease.
- Imagery:** A sensory experience in which images arise, often independent of external stimulation. Such imagery is typically understood as visual, but educational researchers have also explored the use of other sensory “images”: sound, taste, smell, and touch. Imagery has long been a tool in education—think here of Plato’s Myth of the Cave—because images evoke and enrich complex meanings that are otherwise linguistically inexpressible.
- Immediacy:** Behaviors that communicate approachability, facilitating psychological closeness.
- Immigrant status:** The immigration status of students and/or parents.
- Individual instruction:** Typically, one-on-one instruction between a student and teacher/tutor with the aim of immediate feedback, scaffolded concepts, and intervention at key moments of success or difficulty. Other forms of individualized instruction can include tailoring lessons for various student learning needs, providing individualized feedback, and teaching to mastery.
- Inductive teaching:** A teaching technique that encourages students to reason from observation, or to move logically from observing, testing, and comparing to articulating broad principles.
- Information and computer technology:** The classroom use of information technology, such as computers, has been a widely studied topic. Once referred to as computer-assisted instruction, more recently the notion of ICT is more common, as it is the computer processing more than the form (computers, iPad, iPhone) that is the core notion.
- Initial teacher education programs:** Initial teacher education (sometimes undergraduate sometimes post-graduate) is the entry-level qualification for teaching in numerous countries, including the United States. More recently, there are school-based ITEs, non-accredited ITEs, and many on-line ITE programs.

**Inquiry-based teaching:** Inquiry-based teaching is an educational practice in which students are called upon to behave as scientists or philosophers: generating questions and seeking to develop answers through the accumulation of evidence, asking questions or problems, and often includes procedures such as small-scale investigations, or projects.

**Intact, two-parent families:** Children from intact, two-parent families, usually compared to single parenthood.

**Integrated curriculum programs:** Integrated curriculum programs connect different areas of study by cutting across subject-matter lines and emphasizing unifying concepts. Integration focuses on making connections for students, allowing them to engage in relevant, meaningful activities that can be connected to real life.

**Intelligent tutoring systems:** Intelligent tutoring systems aim to provide instructional advice on a one-on-one basis, and to develop and test models about the cognitive processes involved in instruction.

**Interactive video:** A digital video technology that allows students to review segments of a recording in a non-linear way, as many times as they wish. Interactive video has been linked to reduced cognitive overload, greater attention, and greater reflection.

**Interleaved practice:** Interleaving involves implementing a schedule of practice that mixes different kinds of problems, or a schedule of study that mixes different kinds of material, within a single study session. It can also involve mixing, or interleaving, multiple subjects of topics, as opposed to blocked practice, which typically involves studying one topic very thoroughly before moving to another topic.

**Intervention programs for ADHD:** Non drug intervention programs for ADHD students.

**Interventions for students with learning needs:** These studies look at a range of interventions with a particular focus on students usually experiencing much difficulty with learning in classes.

**Jigsaw method:** The Jigsaw instructional method is a cooperative approach to learning originally developed by Elliot Aronson. Following this method, a teacher introduces a main topic and several subtopics. Jigsaw students are broken into home groups, and each member of the home group is assigned a subtopic. Then, students form expert groups to study their assigned subtopic through research and discussion. Then, after the students have mastered the subtopic in question, they return to their home group to report on their findings. At the conclusion of the exercise, each home group member has learned about each subtopic from a member of the relevant expert group or through their own investigation with an expert group.

**Juvenile delinquent programs:** The primary aim of juvenile delinquent programs is rehabilitative, and include programs like Big Brothers and Big Sisters, outward bound type programs, and special schools.

**Lack of sleep:** The typical claim is that insufficient or poor-quality sleep negatively affects learning, memory, and school performance.

**Lack of stress:** Stress has been linked to memory formation along a U-shaped curve, with memory increasing with stress to an inflection point, beyond which memory formation decreases. A major advance has been to focus on the various coping strategies students have to stressful events (from cognitive such as reframing to emotional such as venting).

**Learning hierarchies approach:** An arrangement of learning that ranks learning tasks from lesser to greater complexity. There are many taxonomies from Bloom, SOLO, Web of knowledge, and Gagne's model.

- Lectures:** The use of lectures, typically in higher education, to larger groups of students
- Mainstreaming/inclusion:** Mainstreaming and inclusion involves students with special needs placed in a general education classroom.
- Maltreated Children:** Maltreatment of children can result from sexual abuse, physical abuse or neglect.
- Manipulative materials on math:** Manipulatives are physical objects that students use to better understand content ideas and abstract concepts.
- Mastery goals:** Mastery goals focus on learning, mastering a task according to self-set standards, or self-improvement. It also encompasses developing new skills, or increasing competence.
- Mastery learning:** Based on the premise that all students can eventually learn difficult material, although they will learn at different speeds, this practice calls for all students to learn material at equivalently high (or mastery) levels. It often involves providing formative tests and asking students to repeat lessons until they have mastered them.
- Matching teaching to style of learning:** Where different forms of teaching are tied to the students preferred style of learning (e.g., kinesthetic (movement), visual, auditory, and tactile).
- Mathematics curricula & programs:** Mathematics curricula and programs include modern vs. traditional math, and more generic curricula to oversee the teaching of math.
- Mathematics Direct or Guided:** The teaching of math in a more direct or guide on side approach.
- Mathematics problem solving:** The teaching of mathematic problem solving.
- Mathematics programs—other:** Other math programs include early home numeracy experiences, non-symbolic number acuity, home math environment, and videodisc math interventions.
- Mathematics programs for LD:** Specific math interventions for students with special needs.
- Mathematics teaching specific skills:** The teaching of specific math skills such as fractions, calculus, numerical competencies, basic fact fluency, algebra strategies.
- Mentoring:** Mentoring is most often defined as a professional relationship in which an experienced person (the mentor) assists another in developing specific skills and knowledge that will enhance the less-experienced person's professional and personal growth.
- Meta-cognition strategies:** Meta-cognition is thinking about thinking; include methods used to help students understand the way they learn.
- Micro teaching/video review of lessons:** A technique in which a teacher delivers a short, recorded lesson that is then analyzed by the teacher and/or other teachers and leaders for the purposes of improvement. The lessons are usually videotaped to assist with the subsequent analysis.
- Middle school interventions:** These interventions are argued particular to middle school young adolescents. Based on the Turning Points report, these include interventions aimed to create a community of learning, teach a core of common knowledge, ensure success for ALL students, empower teachers and administrators in shared decision-making, prepare teachers to be certified in middle grades education, improve academic performance through health and fitness, reengage families in the education of young adolescents, and connect schools with the community.

- Mindfulness:** While often associated with South and East Asian spiritual practices, mindfulness means paying attention, on purpose, in the moment, and nonjudgmentally; to become self-aware, empathetic, calming, focused, and with-it.
- Mnemonics:** A practice by which students learn a significant amount of information for long-term recall by memory. There are five classes of mnemonics: linguistic, spatial, visual, physical, and verbal (e.g., HOMES for the Great Lakes).
- Mobile/touch devices/tablets:** The use of mobile devices (e.g., tablets, e-readers, smartphones, iPad) in the learning process.
- Mobility:** School mobility refers to the frequency of such moves among students in a particular classroom, school, or district. This includes those with parent(s) in the military, and many forms of itinerary.
- Modality effect:** The modality effect is used to refer to how learner performance depends on the presentation mode of the studied item. For example, it suggests that learning will be improved when textual information is presented in an auditory format with accompanying visual materials, such as a graph, diagram, or animation.
- Modifying school calendars/timetables:** This includes changing the school terms, semesters, vacation times, times of day for starting and closing school, block scheduling or various time spans for classes.
- Moral judgment programs:** Cognitive development theorists suggest that people judge actions as moral or not based on their understanding of justice and cooperative reciprocity—an understanding that develops over time. Moral judgment programs attempt to cultivate such discernment in students by enabling them to consider and discuss hypothetical moral crises.
- Morning vs. evening:** Circadian rhythms—or sleep cycles—have been shown to significantly impact academic performance. Some prefer working harder in the morning (larks) and some in the afternoon or evenings (owls).
- Motivation:** There are many internal and external factors that motivate and energize students to be continually interested and committed to school learning or to make an effort to attain a goal.
- Motivation programs:** Because motivation is claimed to be a significant factor in academic success, motivation programs seek to inculcate motivation in students.
- Multi-grade/age classes:** Classes in which students of multiple ages or grade levels share the same learning space, although students retain their respective grade-level assignments. While these classes are typically formed administratively by schools coping with declining enrollments or funding, some studies have shown that transitioning to a multi-grade or multi-age classroom does not adversely affect absences, tardiness, or academic achievement.
- Music-based reading programs:** Such programs use music to promote reading among children. They have been found most effective when music activities are linked to specific reading skills, such as pairing alphabet recognition with phonetic patterns. The benefits of music education to reading are greater when specialized music-reading activities are added to the existing music curriculum rather than when these activities replace the music curriculum.
- Music programs:** The effects of music programs on spatial reasoning, on intelligence, and effects of music on curricula.
- Note-taking:** This involves students making notes in a systematic manner. Such notetaking has been linked to increased engagement, more generative learning, and greater self-efficacy. Note this is not providing students with notes, or sharing them, but learning the skills of notetaking.

- One-on-one laptops:** Numerous laptop or computer devices (iPad, netbook, tablet computer et al.) programs attempt to provide laptops to each student in a class or school.
- Online and digital tools:** These include word processing apps, slide presentation software, electronic reference materials, tablet and cellphones apps.
- Open vs. traditional classrooms:** Open classrooms emerged in the 1960s as a response to more restrictive forms of classroom organization featuring rows of desks and a teacher at the front of the room. Generally, an open classroom provides a flexible space, enabling students to choose various activities and to integrate different learning materials into their study during periods of large or small group instruction. In more recent years, the term used more often is “innovative learning environments” and include multiple teachers with a larger number of students (e.g., 3 teachers with 90 students) in one larger space (often with breakout rooms, etc.)
- Out of class communication:** Teacher-student conversations outside of classroom settings—for instance, during recess in the playground.
- Outcomes based education:** Outcomes based education is based on developing the outcomes of the education experience and expecting all students to then reach the goals.
- Out-of-school curriculum experiences:** Since Lauren B. Resnick delivered her 1987 presidential address to the American Educational Research Association, entitled “Learning in School and Out,” educational researchers have expressed renewed interest in what some call out-of-school learning or the out-of-school curriculum. Resnick argued that out-of-school learning is contextualized, situation specific, and socially shared in ways that complement the more regimented features of in-school learning. More recent theorists have pointed to the ways that out-of-school experiences—such as visits to science centers, botanic gardens, and museums—enable forms of out-of-school learning that complement in-school learning.
- Outdoor adventure programs:** These organized, outdoor activity programs promote group or team interactions through shared challenges. They often involve high levels of challenge (high ropes, climbing, white water rapids), can last many days, and aim to impact confidence, cooperation, and coping strategies.
- Outlining and summarizing:** Involves identifying the main ideas and rendering them in one’s own words. The core skill is being able to distinguish between the main ideas and the supporting ideas and examples.
- Parent tutoring:** The effects of parent tutoring on students.
- Parental autonomy support:** The promotion of independence or self-endorsed behavior by parents. Parental autonomy support takes many forms. In one form, the “promotion of independent functioning,” parents encourage their children to rely on themselves and make their own decisions, often in line with parental values. In another form, “promotion of volitional functioning,” parents encourage their offspring to explore, find their own sense of meaning, and make their own decisions based on their own interests and values.
- Parental employment:** Whether no, one, or both parents are in employment.
- Parental expectations:** The level of expectations or aspirations that parents have for the achievement success of their students.
- Parental involvement:** Parental involvement refers to the amount of participation a parent has when it comes to schooling and the child’s life. This can be via events and volunteer opportunities, school management, helping with homework, etc.



- Parental programs:** Programs involving parents, such as family literacy, support, parent education, and home programs to help parents work with students.
- Peer- and self-grading:** Student and peer assessment generally refers to specific judgments of ratings made by students about their achievements, often in relation to teacher-designed categories or rubrics. A claimed benefit is that self-grading is designed to enable students to make corrective changes and to think about their learning in terms of incremental improvement. Peer-grading requires that students actively participate in the judgment of their classmates' work, enabling each student to think more objectively about the learning goals of the assignment and how those goals might be met.
- Peer assessment:** The use of students to provide assessment of their peer's work
- Peer tutoring:** Peer tutoring is a teaching strategy that uses students as tutors. The student pairs might work on academic, social, behavioral, functional, or even social skills. There are many different ways to pair students, such as by ability level, skills mastered, or age. Many studies look at the effects on both the tutor and tutee.
- Peer tutoring on tutee:** The effects of peer tutor on the student being tutored
- Peer tutoring on tutor:** The effect of peer tutor on the student doing the tutoring
- Perceived task value:** A student's perception of the relative usefulness of a particular academic task, often an incremental step in achieving a greater academic goal. The student's perception that a particular task has value shapes his or her willingness to seek help, to exert effort, and to manage his or her own feelings of anxiety. Eccles and colleagues contend that subjective task value is a function of four components: interest (the enjoyment one gets from engaging in the task), utility value (the instrumental value of the task or activity for helping to fulfill another short- or long-range goal), attainment value (the link between the task and one's sense of self and either personal or social identity), and cost (what may be given up by making a specific choice or the negative experiences associated with each possible choice).
- Perceptual-motor programs:** These programs are premised on the belief that neurological deficits related to perceptual and motor skills interfere with academic learning, and therefore they engage students in a range of physical activities designed to improve perception and gross and fine motor skills.
- Performance goals:** Performance goals seek to demonstrate or compare's one ability to others. Students who set performance goals are often focused on winning, looking good (looking smart), and being evaluated well (getting good grades).
- Philosophy in schools:** Philosophy for Children aims to teach reasoning and argumentative skills to children.
- Phonics instruction:** A form of instruction that stresses the acquisition of letter-sound correspondences in reading and spelling. It involves teaching children the sounds made by individual letters or letter groups (for example, the letter "c" makes a k sound), and teaching children how to merge separate sounds together to make it one word (for example, blending the sounds k, a, t makes CAT).
- Phonological awareness:** Involves assessing and improving phonemic awareness, such as phoneme isolation, identification, categorization, blending; segmentation, and deletion.
- Physical syndromes:** The needs of students diagnosed with physical syndromes—such as traumatic brain injury, cerebral palsy, spina bifida, muscular dystrophy, head injury, paraplegia, or fibrous dysplasia—challenge teachers to design curricula emphasizing individualized outcomes.

- Piagetian levels:** A theory of cognitive development articulated by the Swiss developmental psychologist Jean Piaget. According to this model, human beings pass through four stages—sensorimotor, preoperational, concrete operational, and formal operational—as they advance to maturity, although each stage or level has interstitial elements.
- Planning and prediction:** An explicit focus on planning and the use of time, based on which the students have to determine how they are going to perform and what they will need to perform well.
- Play programs:** Play is a generic term applied to a wide range of activities and behaviors that are satisfying to the child, creative for the child, and freely chosen by the child. Play programs attempt to foster resilience, health, and well-being through the use of play.
- Positive ethnicity self-identity:** Ethnic identity is defined as a sense of belonging based on one's ancestry, cultural heritage, values, traditions, rituals, and often language and religion.
- Positive peer influences:** Positive peer influences is when one's peers influence them to do something positive or growth building. Such prosocial acts by peers have been shown to reduce risky behavior, including drug and alcohol abuse, and to improve mental health.
- Positive self-concept:** Our self-concepts or conceptions of our self are cognitive appraisals, expressed in terms of descriptions, expectations and/or prescriptions, integrated across various dimensions that we attribute to ourselves. The integration is conducted primarily through self-testing or self-status quo tendencies. These attributes may be consistent or inconsistent depending on the type or amount of confirmation or disconfirmation our appraisals received from ourselves or from others.
- Practice testing:** Practice testing is a well-established strategy for improving student learning. By practice testing the aim is to support long term retention and increased access to retrieving the to-be-remembered information. Sometimes called retrieval practice, practice testing, or test-enhanced learning.
- Praise:** Praise involves expressing approval or admiration of a student (and his or her performances). It often involves recognition, reassurance, or admiration of a student's attributes or actions.
- Pre-school programs:** Preschool programs vary considerably in pedagogical approach, although most combine learning with play. The settings can vary from home care, play centers, kindergartens, some half day some full time, and can engage students between birth and starting school.
- Pre-school with at-risk students:** Investigates early interventions with preschool-aged children at risk of developmental or behavioral disabilities.
- Presence of mobile phones:** The presence of mobile phones in class (typically not related to the teaching and learning)
- Principals/school leaders:** Principals and other school leaders face unique management challenges because schools are a public service with an array of stakeholders, including policymakers, teachers, teachers' unions, parents, community members, and students. The focus can be management perspective (e.g., transformational, instructional, distributive), overseeing and involvement in professional learning, focus and mission, and the indirect and direct effects of leaders on students learning.
- Prior ability:** A measure of a student's abilities prior to entering formal education or to entering a new educational environment, particularly as measured across linguistic, quantitative, or behavioral domains.

**Prior achievement:** The effects of prior achievement in similar subject matter to later achievement, and the effects that students, given their past record of achievement, can have on process-related skills when they work with a new task.

**Problem-based learning:** In problem-based learning scenarios, students often act in groups and decide what they need to learn to resolve a particular problem or question, while teachers act as facilitators. It usually involves real-world problems to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts. The aim is also to promote critical thinking skills, problem-solving abilities, and communication skills.

**Problem-solving teaching:** Problem solving involves learning to solve a problem that one does not already know how to solve, and can also involve teaching specific, subject-area focused strategies for attempting to solve such problems.

**Procrastination:** The act of delaying or postponing a task or set of tasks.

**Professional development programs:** Professional development relates to courses or interventions aimed to enhance the beliefs, actions, impact of knowledge of teachers and school leaders.

**Programmed instruction:** A mode of instruction first designed by psychologist B. F. Skinner in 1953 that provides students with immediate feedback and enables them to work at their own pace. It includes working alone at their own speed, through a graded sequence of controlled steps, and after each step there is a test of their comprehension by answering an examination question or filling in a diagram.

**Questioning:** A practice by which an instructor or textbook writer poses factual or conceptual questions to students. This educational practice dates to Greek antiquity, if not earlier.

**Re-reading:** Involves re-reading the text when students encounter difficulty in understanding. Re-reading aims to enhance meta-comprehension—enabling students to know better whether they have understood the text, and it can involve asking students to reread a passage with various purposes in mind.

**Reading comprehension programs:** These programs aim at developing comprehension strategies, using text-to-Speech to improve comprehension, the use of expository text on comprehension, and reading comprehension interventions

**Reading programs for specific groups:** Reading programs for ELL, emotional disturbed, struggling, children from developing countries

**Reading Recovery:** A literacy intervention developed from research by New Zealand educator Marie Clay in the 1960s and 1970s. The program works by identifying first-grade students who struggle with reading and then providing them with targeted, individualized interventions across 12–20 weeks with individual, daily lessons.

**Reading strategies:** These reading programs seek to harmonize the entire reading curriculum, thereby teaching reading more effectively over the long term. In particular, comprehensive approaches attempt to align materials, procedures, personnel, and evaluations.

**Reciprocal teaching:** An instructional strategy which aims to foster better reading comprehension and to monitor students who struggle with comprehension. The strategy contains four steps: summarizing, questioning, clarifying, and predicting. It is “reciprocal” in that students and the teacher take turns leading a dialogue about the text in question, asking questions following each of the four steps. The teacher can model the four steps, then reduce her or his involvement so students take the lead and invited to go through the four steps after they read a segment of text.

- Reducing class size:** Reduces the number of students in the class often with the aim of increasing the number of individualized student-teacher interactions to improve student learning.
- Rehearsal and memorization:** Rehearsal is a term used by memory researchers to refer to mental techniques for helping us remember information. It can involve many strategies such as repeating information to be memorized by organizing it at random and repeating the information when prompted by a visual cue, such as an index card or photograph.
- Relating creativity to achievement:** Creativity programs are grounded in a common idea that training, practice, and encouragement in using creative thinking skills can improve an individual's ability to use creative thinking techniques such as thinking with fluency, flexibility, and with an element of the unusual in responses to questions or problems, and this transfers into higher achievement across many subjects.
- Relation of high school to career performance:** The degree to which high school achievement is an optimal predictor of career performance.
- Relations of high school to university:** The degree to which high school achievement is an optimal predictor of university performance. Most often the prediction is from some form of high school GPA to performance at the end of first year university.
- Relative age within a class:** It is common to group children into chronological age-based cohorts established by distinct cut-off dates: children with birth dates that fall before the cut-off are included in the cohort, those born after the cut-off must wait until the next cohort. The differences in age within an annual cohort is termed relative age.
- Relaxation:** This involves physical activity and relaxation exercises usually aimed to reduce stress levels or maintain focus on tasks.
- Religious schools:** There are now many forms of religious schools: Protestant, Catholic, Lutheran, etc., and these are often compared to secular schools.
- Remove children into care homes:** Placement of students into care homes, away from their initial family.
- Repeated reading programs:** Repeated reading involves students repeatedly reading the same passage (usually at least three times) to teachers. When the student miscues, the teacher can read the correct word aloud, and the student rereads the passage until reaching a satisfactory reading level.
- Response to intervention:** Response to Intervention is a multi-tier approach to the early identification and support of students with learning and behavior needs. The RTI process begins with high-quality instruction and universal screening of all children in the general education classroom (Tier 1). Struggling learners are provided with interventions at increasing levels of intensity to accelerate their rate of learning. Those not making progress are then provided with increasingly intensive instruction usually in small groups (Tier 2). If still no progress, then students receive individualized, intensive interventions that target the students' skill deficits (Tier 3).
- Retention:** The practice of retaining a student in a single grade-level in the next academic year because she or he has failed to make adequate progress.
- Scaffolding and situated learning:** Situated learning is premised on the assumption that learning takes place in a social context, and that students will learn best if the subject matter is taught in a meaningful, realistic, and contextually rich way that enables students to understand its relationship to what they already know. Advocates of situated learning suggest that it depends upon scaffolding, a common educational practice by which a teacher establishes and then gradually removes forms of outside assistance that enable students to complete educational tasks.

- School choice:** Often traced to an argument made by economist Milton Friedman in 1955, school choice is premised on the belief that parents should have control over the kind of school their child attends. In the United States and elsewhere, this choice today often takes the form of vouchers: government funding that can be withdrawn from a particular public school and follow a child to a charter school or academy.
- School climate effects:** A school's social and environmental context, often called "school culture" or "learning environment." School climate may include a school's physical characteristics and the relationships between parents, teachers, administrators, and students.
- School effects:** There are many possible effects relating to attending school, the differences between schools, and the factors relating to schools. These 'school effects' are estimates of the overall effects relating to schooling.
- School size:** The effect of the number of students in a school on student achievement. Most of the research is at the high school level.
- Science conceptual change programs:** Teaching for conceptual change involves uncovering students' preconceptions about a particular topic and using various techniques to help students change their conceptual framework. Conceptual change theory depends on two assumptions: that teachers and learners share a "conceptual ecology," or an environment in which particular assumptions about learning predominate, and that change is only possible when intelligible, plausible, and useful alternatives to core assumptions are presented to teachers and learners.
- Science lab programs:** Programs taught via science laboratories to enhance science understanding.
- Science programs:** There are many innovative science curricula and programs that have been investigated for improving students' science achievement.
- Screen time:** The duration of screen time related to achievement
- Self-control:** Self-control relates to the capacity to alter or override dominant response tendencies and to regulate behavior, thoughts, and emotions
- Self-directed learning:** Learning where the student takes charge of the learning, seeks out information and develops solutions with minimal or no aid by a teacher
- Self-efficacy:** First theorized in educational theory by Albert Bandura, "self-efficacy" refers to a sense of confidence or the set of self-perceptions that influence thought, actions, and emotional arousal by enabling people to make decisions about what course of action they intend to pursue.
- Self-judgment and reflection:** Self-judgment is a critical component of independent, self-directed learning, and yet students can often over- or underestimate their own capabilities. Educational researchers have long advocated that teachers attempt to cultivate in students the ability to dispassionately apply established standards to their own work. Such an ability has gone by several names in academic scholarship: "evaluative knowledge," "evaluative expertise," "sustainable assessment," "informed judgment," or "self-judgment." Yet, throughout this scholarship, researchers have pressed the importance of a student's ability to reflect on her work, discern its relationship to established standards, and make self-judgments.
- Self-regulation strategies:** Self-regulated learner requires motivation (for instance, to attempt to solve a math problem), cognition (to think through the problem), and metacognition (to review whether she's performing the task correctly).

- Self-reported grades:** A practice by which students assess the quality of their own work or their level of mastery over a given subject domain. The validity of such self-grading is often assessed by comparing a student's "self-reported" grade with that provided by an instructor.
- Self-verbalization/self-questioning:** Self-verbalization (talking to oneself about a difficult intellectual task) and self-questioning (interrogating oneself about the information one encounters) are both cognitive tools, and both have been associated with higher levels of understanding. Indeed, numerous studies have directed students to ask themselves different types of questions while reading (higher-order questions about meaning; self-monitoring questions about the reading process; or questions about relevant prior knowledge).
- Sentence-combining programs:** Teaching students to combine simple sentences to form grammatically correct, syntactically complex sentences has been argued to be a key element of developing the stylistic maturity of student writers.
- Service learning:** A teaching strategy that combines community service and learning from classroom instruction. Students engage in community service activities and apply the experience to personal and academic development. The aim is to benefit both the community and the learner.
- Single-sex schools:** Single-sex, that is all-male or all-female schools were common among nineteenth century elites and some members of the middle class, and that century also witnessed the emergence of all women's colleges—including the so-called Seven Sisters of Barnard, Bryn Mawr, Mount Holyoke, Smith, Wellesley, Vassar, and Radcliffe.
- Small-group learning:** This is where students are grouped into smaller groups within the class.
- Smartboards:** The use of a large touch-sensitive board connected to a computer and a digital projector to deliver curricula material and discuss student work.
- Social-skills programs:** School-based programs for developing students' social and emotional skills. The programs teach students to appropriately interact and communicate effectively with their peers and teachers and develops respect for self and respect for others.
- Socioeconomic status:** Socioeconomic status is generally used to refer to an individual or family's rank in the interrelated hierarchies of wealth, power, and social prestige.
- Sound or inference:** Sound or inference includes programs that derive word meaning from context, spelling to sound regularities and reading, morphological teaching, or rapid automatized naming and reading.
- Spaced vs. mass practice:** The claim is that students are better able to commit information to memory when they study that information in spaced (or distributed) intervals rather than all at once in a "massed" interval. Spaced practices involve practice broken up into a number s shorter sessions, over a longer period of time. Massed practice consists of fewer, longer training sessions.
- Special college programs:** Special college programs often involve more flexible programs such as accelerated programs, distance learning, double majors, dual enrollment, independent study, internship, service learning, study abroad.
- Special education programs:** These programs emerged between the middle of the 1960s and 1975, as state legislatures, federal courts, and the United States Congress established strong educational rights for children with disabilities. Some 45 state legislatures passed laws providing educational rights to such students during this period, and federal courts interpreted the due process clause of the U.S. Constitution as guaranteeing equal access to education. The programs are considered as a means of achieving the goals of the Individuals with Disabilities Act: equal opportunity, full participation in society, independent living, and economic self-sufficiency.



- Spelling programs:** Spelling programs refer to commercial programs for teaching spelling in classrooms. Traditionally spelling skills in English present a substantial challenge for many children, as spelling skills do not transfer from reading skills automatically.
- STEM programs:** Programs centered around Science, technology, engineering, and/or math curricula.
- Stereotype threat (absence of):** A person experiences stereotype threat when she perceives that she faces judgment based on stereotypes about a group to which she ostensibly belongs, such as a race, gender, or sexual minority. Studies have shown that “stereotype threat” can be diminished by eliminating the “situational predicament” in which people expect to perform a particular way because of the group to which they belong. In essence, those delivering assessments are encouraged to measure academic, cognitive, or athletic performance in ways that disrupt perceived stereotypes about the performance of particular groups.
- Strategy monitoring:** A metacognitive practice whereby a student monitors her or his own strategies to complete a task. It often involves students being trained both in problem-solving techniques and in monitoring techniques (through which they observe how and whether they are following problem-solving protocols).
- Strategy to integrate with prior knowledge:** The argument is that readers who establish more connections between a text and their prior knowledge produce stronger situation models, or cognitive maps of a given state of affairs. This situation model, in turn, is aimed to improve comprehension and improved recall.
- Strong classroom cohesion:** The sense that the teacher and the students are working together toward positive learning goals. The class is perceived as fair, respectful, and focuses on supporting all students in their learning.
- Student-centered teaching:** Refers to learning experiences intended to address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students and groups of students. It focuses on the needs to students, involves modifications and adaptations, and often is premised on the notion that learners construct their own understanding of the world, and thus must be active participants in learning.
- Student control over learning:** Involves students taking responsibility for their own instruction (often via computer-based learning), their pace of learning, how much time they spend on learning each step, and control over where to go next in their learning.
- Student expectations:** Students have expectations of their performance and outcomes, and this can help determine how they intend to invest in an activity.
- Student personality:** There are many models of personality, and the most supported is the Big Five: agreeableness, conscientiousness, neuroticism, extraversion, and openness.
- Student rating of quality teaching:** These are the ratings students give about their learning, the impact of the teaching, and the climate of the class.
- Students feeling disliked:** Students who perceive that they are disliked by peers or teachers are likely to have lower levels of achievement and are preferred less by teachers.
- Study skills:** Techniques and strategies that students deploy to prepare for and complete schoolwork and tests. These skills can include test-taking strategies, time management skills, reading techniques, and note-taking practices.
- Success criteria:** Success criteria are the standards by which the project will be judged at the end to decide whether or not it has been successful. They are often brief, co-constructed with students, aim to remind students those aspects on which they need to focus, and can relate to the surface (content, ideas) and deep (relations, transfer) successes from the lesson(s).

- Sugar:** Studies have shown that sugar consumption is linked to dental health problems, weight gain, type 2 diabetes, dyslipidemia, and nonalcoholic fatty liver disease. Moreover, some parents and health advocates have challenged USDA school breakfast guidelines, which they suggest allow higher than appropriate levels of sugar consumption in U.S. public schools. A study of the 2005 ban on vending machines in French schools revealed that students consumed ten fewer grams of sugar per morning of school attendance, although this reduction was slightly less than hoped.
- Summarization:** The ability to summarize a text is often taken as a marker of reading comprehension, and for this reason many scholars have advocated explicit summarization training for students who struggle with comprehension. This can include delete unnecessary material, delete material that is redundant, substitute a subordinate term for a list of items or actions, select a topic sentence, and construct a topic if one is only implicitly suggested by the text.
- Summer school:** Remedial summer school programs for students who have not made adequate progress toward meeting grade-level expectations.
- Summer vacation length:** The influence of different lengths and timing of the summer vacation on student performance. A number of school districts have considered or even implemented alternative school calendars, eliminating, reducing, or expanding summer vacation.
- Surface motivation and approach:** A student's surface motivations as he or she approaches learning can be contrasted with deep, intrinsic motivations. For instance, a student might be motivated to learn to achieve a particular grade in order to participate in a sports program, to gain sufficient facts and content to pass a test, or to look good in front of their peers.
- Suspension/expelling students:** When students are removed from the school permanently or temporarily.
- Systems/accountability systems:** School districts and state education agencies rely on complex accountability systems as a means of measuring their efforts to meet accountability purposes. These systems vary a lot and typically include outcome achievement measures, growth measures, school climate indicators, and can involve external inspectors.
- Tactile stimulation:** Students who struggle with achievement in school are provided with tactile stimulation and environment manipulation aimed to increase focus and time-on-task and attention.
- Teacher clarity:** Teacher clarity relates to organization, explanation, examples and guided practice, and assessment of student learning. It can involve clearly communicating the intentions of the lessons and the success criteria. Clear learning intentions describe the skills, knowledge, attitudes, and values that the student needs to learn.
- Teacher credibility:** Students who regard their teacher as a credible authority based on their perceptions of competence, trustworthiness, and perceived caring. Is this teacher someone I can turn to for feedback, help, knowledge, and depth of understanding, and am I prepared to invest in her or his assigned tasks to enhance my learning?
- Teacher effects:** The effect that a particular teacher has on student learning (often compared to school, curricula, student, home, etc., effects).
- Teacher estimates of achievement:** The estimates of student achievement made by teachers. These teacher judgments can help set expectations, be used to anchor on past understanding, are involved in setting the next challenges, identify those who may have early signs of difficulties, inform placement and intervention choices, and influences instructional choices. These judgments come from questioning, observing, written work presentations, how the student reacts to increased challenge, and assignments and tests.

**Teacher expectations:** The expectations about performance held by teachers. These can be accurate, affected by biases (social background, gender, culture), but more often teachers hold either low, medium or high expectations for all their students.

**Teacher expectations—physical attractiveness:** The expectations by teachers about achievement for more physically attractive compared to the other students.

**Teacher performance pay:** When teacher pay is tied to some measure of the performance of their students (sometimes called merit pay).

**Teacher personality:** As with student personality, the typical personality factors investigated are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism.

**Teacher qualifications:** The relation of the qualifications of teachers to student achievement.

**Teacher subject-matter knowledge:** Such knowledge can relate to pedagogical, content, or horizon (seeing connections with the content the teacher is teaching) knowledge.

**Teacher verbal ability:** The ability to speak well and have high levels of verbal proficiency.

**Teacher-student relationships:** The quality of the relationship between the teacher and student, and in many cases also the relationships developed by the teacher between the students.

**Teachers not labeling students:** Consider two students of the same personality, behavior, or aptitude; label one (e.g., Asperger's, naughty, struggling) and not the others. This research investigates the effects of these labels. Labeling can lead to effective intervention and/or could lead to discrimination or exclusion.

**Teaching creative thinking:** Programs that teach students to consider original, novel processes and outcomes.

**Teaching test-taking and coaching:** Teaching test-taking strategy courses (e.g., strategies for guessing, keeping to time, and reducing anxiety) and theoretical instruction (explanations of deductive reasoning protocols).

**Technology in distance education:** The various uses of technologies in situations where the student is remote from the teacher and often not part of a regular classroom of students.

**Technology in mathematics:** The use of various computer technologies in the teaching of mathematics.

**Technology in other subjects:** The use of computer-assisted instruction—essentially, software designed to teach particular skills, methods, or concepts.

**Technology in reading/literacy:** The use of various computer technologies in the teaching of reading and literacy.

**Technology in science:** The use of various computer technologies in the teaching of science.

**Technology in small groups:** The use of technology in small-group settings—either face-to-face groups or remotely interacting groups.

**Technology in writing:** The use of various computer technologies in the teaching of writing.

**Technology with college students:** The use of various computer technologies in the teaching of college students.

- Technology with elementary students:** The use of various computer technologies in the teaching of elementary students.
- Technology with high school students:** The use of various computer technologies in the teaching of high school or secondary students.
- Technology with learning needs students:** The use of various computer technologies in the teaching of students with particular learning needs.
- Television hours:** The effects of the number of hours spent watching television or watching particular types of programs on television.
- Testing:** More often this is the effects of standardized testing on student performance but can include teacher constructed tests. These effects can relate to the form, length, and stakes of the tests.
- Time on task:** The engaged, elapsed, allocated, or total time on a task. It could also relate to number of days on a lesson, attendance at these lessons.
- Tracking/streaming:** Separating students, most often by academic ability, into groups for all subjects or certain subjects, and often then adjusting the expanse and depth of curriculum for these tracks. It is referred also as streaming or phasing in various countries.
- Transfer strategies:** For learning to be effective, students must be able to make a spontaneous, unprompted, and appropriate transfer of a learning or problem-solving strategy from one context to another. This can be near transfer to new problems similar to the instruction, or far transfer to new situations and domains.
- Underlining and highlighting:** This involves underlying or highlighting the main ideas, or how ideas are related, and aims to help with recall and seeing the links between parts of the text.
- Use of calculators:** The use of electronic methods for completing calculations in mathematics.
- Use of PowerPoint:** The use of software slide-presentation programs, now available from various software companies.
- Virtual reality:** Provides simulations and augment reality to help students experience activities.
- Visual-perception programs:** Programs aimed to enable students to make sense of and interest what they are seeing. It involves developing skills of visual discrimination, visual memory, figure ground perspective, and visual closure.
- Vocabulary programs:** Programs to build the vocabulary, subject matter vocabulary, and make connections to other words.
- Volunteer tutors:** Some literacy programs rely on volunteer tutors, which have been recommended by some researchers as a low-cost way of providing one-on-one instruction to learners. They often work one-on-one or in small groups, assist in decoding text, model reading themselves, and can extend and support literacy learning.
- Web-based learning:** With the proliferation of sophisticated online tools for teaching, Web-based learning today refers to many different online activities. Students might visit websites to acquire key information; might write on a blogging platform in connection with an in-person or online course; might communicate with classmates through Internet platforms, such as Slack or GoogleDocs; might develop born-digital projects with groups of fellow students; or might interact with each other and their instructor through an online learning management system, such as BlackBoard.

- Webinars:** The delivery of instruction via webinars (e.g., via zoom, teams).
- Well-being:** Well-being refers to how students feel and think about their lives, especially the presence of pleasant and positive affect (e.g., happiness) and the absence of unpleasant affect (e.g., depression).
- Whole language approach:** An approach to reading that shows students how language is a system of parts that work together to make meaning. It has also been called balanced literacy and invites students to learn reading by exploring a literacy-rich environment.
- Whole school improvement programs:** Multi-component, multi-year improvement programs of an entire school designed to transform a school into an institution that meets the educational and psychological needs of students and state-mandated academic goals.
- Whole-school reduction of achievement gap:** The effects of school wide programs aiming to reduce the gaps between minority and non-minority students
- Within-class grouping:** This form of organizing students into small groups by interest, skill, ability, or various other factors within their regular classroom.
- Worked examples:** A worked example is a problem statement with step-by-step guidelines for finding the solution. Based on the assumption that human beings have limited working memory, worked examples enable students to focus on discrete problem-solving tasks, rather than attempting to hold each of the steps in their working memory while solving a complex problem. In a "faded solutions" variant of the worked example, subsequent problem statements have fewer and fewer instructions until the student is able to complete the complex problem-solving task without the assistance of step-by-step guidelines.
- Working memory strength:** Working memory is the cognitive site in which a person holds and manipulates information for a brief period of time, typically because this information is relevant to a current task. While cognitive scientists have endorsed multiple theories about precisely how working memory functions, educational theorists have concluded that a strong working memory is linked to the ability to switch from one rule-based task to another. Children with weaker working memories tend to perseverate, or repeat behaviors or protocols that are no longer relevant. Finally, students with weaker working memory tend to perform worse academically.
- Working memory training:** The capacity to temporarily retain and manipulate information. It is often claimed to consist of four components: the phonological loop temporarily stores phonological information; the visuospatial sketchpad temporarily maintains visual or spatial information; the episodic buffer integrates or 'binds' and consequently stores information from the phonological loop and visuospatial sketchpad with long-term memory; and then these three storage systems work under the influence of the central executive, which is responsible for retrieving and manipulating information, and directing resources to the storage components.
- Writing programs:** Programs to enhance student's writing prophecies.