Reaching Students Through Synectics: A Creative Solution

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A wise English poet once said, "You can please some of the people all of the time and all of the people some of the time, but you cannot please all of the people all of the time." As relevant today as it was six hundred years ago, John Lydgate's observation unwittingly describes the predicament of twenty-first-century schoolteachers. As student populations become increasingly diverse, teachers struggle to identify instructional models that will enable them to reach all of their students all of the time.

The latter half of the twentieth century saw major advances in educational sciences, offering teachers new perspectives into the invisible process of learning. Jean Piaget and Lev Vygotsky led the way studying cognitive development and the construction of knowledge through qualitative observation and experimentation. Advances in the medical field, including technology to monitor brain activity, provided quantitative explanations to further illuminate the mystery of learning.

In order for teachers to apply this wealth of insight to educational practice, they themselves had to be educated. They needed training not just in the concepts but also in effective ways of integrating those concepts into their teaching. Educational researchers and theorists began formulating instructional models to assist teachers in utilizing scientific discoveries to enhance student learning. The most effective models capitalized on several philosophical, psychological and social perspectives.

Synectics is one such model. Although originally designed to facilitate invention and problem solving with adults in industrial settings, its eclectic scientific basis has made it a natural classroom tool. Although the model has been in practice in American schools since the early 1960's, it remains relatively unknown and underused.

History

William J.J. Gordon began formulating the Synectics method in 1944 with a series of studies designed to discover the psychological mechanisms of creative thought. At that time, most psychologists considered creativity a mystical, subconscious process that science could not measure without disrupting the process itself. Gordon, however, believed identifying the subconscious processes and bringing them into conscious thought would not disrupt the creative process; in fact, he believed that doing so would enhance it.

Gordon's Synectics team examined creative individuals in the midst of their creative processes by encouraging them to think aloud as they solved complex problems. Comparing recordings of these sessions, the researchers discovered that their subjects entered into certain psychological states en route to creative solutions, states that fostered divergent, metaphorical thinking. These included detachment, involvement, deferment and speculation.[1]

Gordon and his team devised a procedure of mental exercises to guide everyday problem-solvers into these psychological states. In subsequent tests, they confirmed that average thinkers could consciously achieve creative thought patterns by following a simple set of guidelines. Even naturally-creative thinkers benefited from conscious application of the Synectics mechanisms.[2]

When the Synectics team expanded its study of individuals to include collaborative groups, they observed the same psychological states. In addition, they found that social interaction made

[1] William J. J. Gordon, *Synectics: The Development of Creative Capacity* (New York: Harper & Row, 1961), 3-32.
[2] Ibid., 37.

the creative process more efficient.[3] Because of these findings, the Synectics team promoted its model as a group activity, although the principles are equally operative for individual use.[4]

How It Works

The term Synectics, from the Greek "syn" and "ektos," refers to the fusion of diverse ideas.[5] It assumes that at the most basic levels, the diverse ideas in question are "the strange" and "the familiar." Although inventors most often engage in "making the familiar strange," students benefit more from "making the strange familiar."[6] Synectics achieves both objectives through use of metaphor. According to Aristotle: "Metaphor (meta-phora) consists in giving the thing a name that belongs to something else, the transference being either from genus to species, or from species to genus, or from species to species, or on the grounds of analogy."[7] In the classroom, Synectics utilizes three metaphorical forms: direct analogy, personal analogy and compressed conflict.[8]

Direct analogy examines similarities between two ideas.[9] For example, students may compare the cardiovascular system to a superhighway, drawing as many connections as possible between the two. If blood cells are like delivery trucks traveling through the vascular system to deliver oxygen to the body's organs, then a blood clot is like a traffic jam preventing the blood cells from making their vital deliveries.

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[3] Ibid., 23.
[4] W. Timothy Weaver and George M. Prince, "Synectics: Its Potential For Education*," Phi Delta Kappan* 71:5 (January 1990), 378.
[5] Vincent Nolan, "Whatever Happened to Synectics?" *Creativity and Innovation Management* 12:1 (March 2003), 25.
[6] William J. J. Gordon, *The Metaphorical Way of Learning and Knowing* (Cambridge, MA: Porpoise Books, 1973), 11.
[7] Aristotle, *The Poetics,* XXI.
[8] Gordon, *The Metaphorical Way of Learning and Knowing*, 18. Note: The original metaphorical forms were personal analogy, direct analogy, symbolic analogy and fantasy analogy. Synectics, Inc. later modified them for educational use. For details on the original forms, see Gordon, *Synectics,* 36.
[9] Ibid., 18-21.

Personal analogy encourages participants to empathize with subject matter.[10] Using the previous example, as students imagine what it feels like to be a blood cell traveling throughout the body, they might discuss the frustration and helplessness a blood cell feels during a blood clot based on their experiences in traffic jams.

Compressed conflict deepens students' conceptual understanding by examining natural paradoxes.[11] For instance, the blood clot is a "lifesaving killer" since a clot in the brain results in a potentially deadly stroke, but a clot in a flesh wound prevents one from bleeding to death. Young students often struggle to identify paradoxes, in which case the teacher can assist them by suggesting conflicting terms.[12] In the blood cell discussion, the teacher might ask how a blood clot is like a lifesaving killer and let the students devise the explanation.

In order to qualify as Synectics, the process must follow one of two multi-phase procedures. The procedure for "creating something new" is:

> Phase I: Description of the Present Condition
> Phase II: Direct Analogy
> Phase III: Personal Analogy
> Phase IV: Compressed Conflict
> Phase V: Direct Analogy (based on the compressed conflict from Phase IV)
> Phase VI: Re-examination of the Original Task[13]

It is important to note that students may not return to the original problem until the final phase.

[10] Ibid., 21-25.
[11] Ibid., 25-29.
[12] Ibid., 28.
[13] Bruce Joyce and Martha Weil, *Models of Teaching*, 5th ed. (Boston: Allyn & Bacon, 1996), 244.

The procedure for "making the strange familiar" consists of seven phases:

Phase I: Substantive Input (The teacher presents the new topic)
Phase II: Direct Analogy (The teacher suggests an analogy and asks students to explain it)
Phase III: Personal Analogy
Phase IV: Comparing Analogies (Students point out the similarities between the new material and the direct analogy)
Phase V: Explaining Differences (Students recognize where the analogy breaks down)
Phase VI: Exploration (Students re-explore the original material)
Phase VII: Generating Analogy (Students repeat the analogy process in small groups, this time creating their own analogies)[14]

The procedure for "creating something new" often begins and ends in small groups, but the procedure for "making the strange familiar" must begin with the teacher's direct guidance to prevent students from drawing inappropriate analogies that could cause them to learn the new material incorrectly.

The Construction of Knowledge

The Synectics model reflects its creators' firm belief in the constructivist philosophy of education. Constructivists reject the objectivist assumption that teachers provide knowledge and students merely store it. Instead, they believe learners construct their own versions of reality by forming personal connections between new and existing knowledge.[15]

Pioneer-constructivist Jean Piaget explains this process with schema theory. He claims learners organize knowledge by constructing schemata, intellectual structures comprised of the cumulative characteristics the learner has come to associate with a concept. When he encounters a new stimulus, the learner attempts to assimilate it into his existing schemata based on its familiar characteristics. When a new stimulus will not fit any of his schemata, the learner accommodates it by either adapting an existing schema such that it can assimilate the new idea or

[14] Ibid., 251.
[15] Peter Sutherland, *Cognitive Development Today: Piaget and his Critics* (London: Paul Chapman Publishing, 1992), 79.

creating a new schema.[16] Metaphorically speaking, teachers provide the blocks, but the learner decides what to build with them.

Like Piaget, Russian psychologist Lev Vygotsky believed that learning was a constructive process, but unlike Piaget, he believed teachers profoundly influence how students construct knowledge.[17] For example, if the teacher relies primarily on mimetic teaching models, the student may struggle to make connections between new information and his existing knowledge. Instead, the student is likely to create new schemata, isolating the new ideas from the rest of his knowledge. The student will be able to regurgitate the information on a test designed to trigger its retrieval but will be unable to transfer that knowledge to any other situation.

On the other hand, generative teaching models make learners active participants in the learning process by guiding them in connecting new knowledge with existing knowledge, and thereby enabling them to access the same knowledge in multiple contexts. Two thousand years ago, Aristotle advocated the use of metaphor to facilitate generative learning. "Ordinary words convey only what we know already; it is from metaphor that we can best get hold of something fresh."[18] Through metaphor, Synectics empowers students to make meaningful connections between ideas, connections that take advantage of students' unique experiences and understandings.[19] In doing so, it enables teachers to facilitate conceptual understanding among diverse students.

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[16] Barry J. Wadsworth, *Piaget's Theory of Cognitive Development* (New York: David McKay, 1971), 12-16.
[17] Elena Bodrova and Deborah J. Leong, *Tools of the Mind: The Vygotskian Approach to Early Childhood Education* (Englewood Cliffs, NJ: Prentice-Hall, 1996), 9.
[18] Aristotle, *Rhetoric*, Book III, Part X.
[19] W. J. J. Gordon and T. Poze, "SES Synectics and Gifted Education Today" [1980], in *Creativity and Giftedness* (Thousand Oaks, CA: Corwin Press, 2004), 2.

The Metacognitive Influence

Synectics also employs principles of metacognitive psychology, which examines how learners improve the quality of their own learning by adopting conscious awareness of the process.[20] Vygotsky became one of the first to address metacognitive behavior by differentiating between lower and higher mental functions. Lower mental functions, including sensation, reactive attention, spontaneous memory and sensorimotor intelligence, are subconscious cognitive processes that develop naturally in infants and even some animals. Higher mental functions, such as mediated perception, focused attention, deliberate memory and logical thinking, are conscious behaviors that human beings learn and apply within a social context.[21]

Gordon reasoned that creative thinking, a trait unique to humans and dependent upon social context, was a metacognitive behavior, and therefore trainable. Furthermore, metacognitive psychology suggested that conscious awareness of the process would improve the quality and efficiency of creative thinking. Based on this logic, Gordon sought to codify the mechanisms of creative thinking.

Vygotsky would classify Synectics as a mental tool – an intentional strategy for enhancing the effectiveness of higher mental functions. Mental tools, he claimed, play a key role in cognitive development by functionally changing the way learners perceive, process and store information.[22]

When Gordon customized Synectics for the classroom, he observed that its metacognitive qualities improved learning for students of all levels of ability.

[20] Sutherland, *Cognitive Development Today*, 95.
[21] Bodrova & Leong, *Tools of the Mind*, 19-20.
[22] Ibid., 3.

> Giving explicit skills for focusing and analogy-formation (connection-making) to slow learners is the difference between those students being able to learn and being unable to learn. These same skills increase the learning reliability of average students because they operate purposefully, not accidentally. As for gifted students,…although they are fast learners, their connection-making is subliminal, not at a conscious level where they can use it…when the process operates consciously and explicitly, their analogues become conscious elements which can be built-on purposefully in imaginative ways.[23]

Donald and Judith Sanders describe observers' reactions to a metaphorical lesson they conducted with a class of fourth-graders,

> "Did you know that those children were grouped 'low to middle'?" (No, we didn't; they had seemed like "average" kids to us). "Well, if anyone had seen those children during the last hour, they would have sworn you were working with a group of gifted/talented kids."[24]

The Developmental Debate

Developmental psychology offers conflicting theories concerning whether or not Synectics is an appropriate teaching model for young children. According to Piaget's stage theory, children in the preoperational stage of cognitive development (roughly ages two to seven years) are egocentric, meaning they are unable to consider situations from any perspective other than their own.[25] The ability to assume alternative perspectives is central to the personal analogy mechanism of Synectics. Preoperational children also tend to focus on one or two superficial aspects of an event and are unable to expand their perception to other aspects.[26] Theoretically, this stage limits the extent to which a preoperational child can productively pursue any analogy; however, the Synectics mechanisms also resemble the symbolic play Piaget associates with the

[23] Gordon & Poze, *SES Synectics and Gifted Education Today*, 2.
[24] Donald A. Sanders and Judith A. Sanders, *Teaching Creativity Through Metaphor: An Integrated Brain Approach* (New York: Longman, 1984), 112.
[25] Wadswoth, *Piaget's Theory*, 71.
[26] Ibid., 75.

preoperational stage. This association indicates that young children may be even more responsive to metaphorical instruction than more developed children.[27]

Social-interactive theorists, like Vygotsky, place less value on biological factors of development (nature) and more value on the child's learning experiences (nurture). Without denying biological predispositions, social-interactive theorists claim that children's cognitive abilities advance more discreetly as they acquire mental tools to facilitate higher levels of thinking. Acquisition of mental tools requires the intervention of a more developed thinker (i.e. a teacher) who possesses the tool and can scaffold the learner through the process of mastering the strategy. Because complex mental tools build on simpler ones, cognitive development tends to be sequential as in Piaget's stage theory, although the "stages" are shorter and more flexible.[28] The key difference between these theories is that, in attributing cognitive development to the learner's unique social experiences, social-interactive theory implies that parents and teachers can influence a child's rate of development. Stage theory views cognitive development as an immutable force of nature.

Vygotsky is perhaps best known for conceptualizing the Zone of Proximal Development (ZPD), which defines the skills a students is able to learn at a given point in time based upon his development and previously learned skills. Whereas Piagetian theory defines development based on what a child can or cannot do on his own, Vygotsky's definition of development also incorporates what a child can do with assistance – that is, behaviors he is in the process of learning or is developmentally ready to learn.[29] According to Vygotsky, a child who is unable to draw analogies on his own may be able to do so with assistance and then use those analogies to enhance his understanding of new ideas. Furthermore, if he practices making analogies with

[27] Bodrova & Leong, *Tools of the Mind*, 124.
[28] Ibid., 22-23.
[29] Ibid., 35-41.

assistance today, he may be able to make them on his own tomorrow. If his teachers assume he is not developmentally ready to learn through metaphor because he cannot yet do so on his own, it will be some time before he acquires that mental tool.

According to Sanders and Sanders, "Children accept the method readily; they respond naturally to images and welcome the spontaneity of insight."[30] Synectics, Inc. documents the formal use of Synectics as early as the fourth grade.[31] Other research documents enhanced learning through less structured metaphorical models as early as Kindergarten.[32] While the structure of Synectics may limit its formal application to older children, its premise that conscious application of metaphor enhances learning holds true for schoolchildren of all ages.[33]

Play and Learning

Perhaps Synectics appeals to children because of its strong resemblance to play. Most psychology textbooks bypass defining play perhaps because the term encompasses such a wide range of activities and changes dramatically in perception throughout the life cycle. At its core, play is a voluntary, pleasurable exploration of reality through conscious manipulation of objects and ideas. Numerous theorists have extolled the role of play in the learning process, most notably Plato and more recently, Piaget and Vygotsky. Some consider the two activities virtually synonymous.

Etymologically, the Greek words for pedagogy (*paidagogia*), education (*paideia*), play (*paidia*) and children (*paides*) all derive from the same root, suggesting Greek culture made the correlation between play and learning thousands of years ago. In *The Republic*, Plato asserts that

[30] Sanders & Sanders, *Teaching Creativity Through Metaphor*, 101.
[31] Weaver & Prince, "Synectics: Its Potential For Education," 385.
[32] Sanders & Sanders, *Teaching Creativity Through Metaphor*, 208.
[33] Joyce & Weil, *Models of Teaching*, 256.

play promotes discovery and the understanding of truth. This Greek master believed play was the most appropriate means of educating young people to become honorable citizens.[34]

By its nature, play is intrinsically motivating; accordingly when applied to education, play motivates learning.[35] By making learning enjoyable and creative, Synectics engages otherwise uninterested students in classroom activities. "Students are stimulated when they are excited and encouraged when they produce original ideas related to significant subject matter."[36]

Vygotsky's research suggested that metacognitive functions mature as people use them interactively to build on one another's ideas, as children do in play.[37] Since his death, Vygotsky's followers have conducted several quantitative studies substantiating the presence of metacognitive behaviors in children's play that are notably absent in their non-play activities.[38] The element of social play thereby enhances Synectics' inherent value as a mental tool.

Piaget identified different forms of play as characteristic of specific levels of cognitive development. Synectics exploits the imaginative qualities of Piaget's symbolic play stage, which he associated with preoperational development.[39] The symbolic transformations children apply during play bear a strong resemblance to the mechanisms of creative thought.[40] A child at play uses a banana as a telephone to carry on a conversation with an imaginary friend; she assigns personalities to the dolls at her tea party as she drinks from an empty cup. Her slightly-older brother turns the living room into a stormy sea where the couch is the only lifeboat. Unaffected

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[34] Arthur A. Krentz, "Play and Education in Plato's Republic," Twentieth Congress of Philosophy, August 1998. *http://www.bu.edu/wcp/Papers/Educ/EducKren.htm*, accessed 6 May 2007.
[35] Susan Codone, "The Effectiveness of Play as an Instructional Strategy on Procedural Learning, Learner Enjoyment, and Instructional Design" (Paper presented at Design, Develop, Collaborate Instructional Design Conference, University of Georgia), *http://faculty.mercer.edu/codone_s/codone_play.doc* (April 2001), accessed 5 May 2007.
[36] Richard Hindley, "The Use of Synectics in the Franconia College Core Program," 1966; as cited in Gordon, *The Metaphorical Way of Learning and Knowing*, 34.
[37] Bodrova & Leong, *Tools of the Mind*, 11.
[38] Ibid., 125-126.
[39] Ibid., 124.
[40] Gordon, *Synectics*, 122.

by the constraints of time, three five-year-olds assume the roles of Mommy, Daddy and Baby, and an entire night passes in mere seconds. According to Piaget, the symbolic play stage disappears around the age of seven when children progress from the preoperational stage to concrete operations. Synectics aims to reproduce the preoperational child's fluency in suspending reality systematically through analogical mechanisms.

A Cooperative Model

While students can benefit from using Synectics on their own, some of its educational value is lost when removed from the social environment. Working with other students who perceive situations differently helps students adapt to and understand alternative perspectives.[41] This understanding, in addition to being a crucial element of social and cognitive development, broadens students' abilities to think creatively by means of Synectics' personal analogy mechanism. Furthermore, it promotes appreciation for diversity and cultivates the interpersonal skills and sense of self-worth that develop through positive peer interaction.[42]

Peer interaction also enables students to benefit from distributed cognition as they co-construct knowledge.[43] When students work together, they benefit from the group's combined knowledge and understanding, which is invariably greater than that of any one student. Even students who have taken the same courses will not share identical bodies of knowledge. Moreover, since students assimilate and accommodate information in unique ways, a given stimulus may trigger the recollection of different knowledge in each group member.

Group work also helps bridge the gap between the teacher's level of thinking and that of her students. Because students share similar experiences, they can often explain concepts to one

[41] David A. Goslin, *Engaging Minds: Motivation & Learning in America's Schools* (Lanham, MD: The Scarecrow Press, 2003), 95.
[42] Lynda A. Baloche, *The Cooperative Classroom: Empowering Learning* (Upper Saddle River, NJ: Prentice-Hall, 1998), 6-7.
[43] Jeanne Ellis Ormrod, *Essentials of Educational Psychology* (Upper Saddle River, NJ: Prentice Hall, 2006), 68.

another with more apparent clarity than the teacher can. As one high school student explained, "Sometimes coming from the teacher it is a lot more technical. I know they try to bring it down to your level, but when you do it with your friends… they can rephrase it and they can help you."[44] Synectics provides a structure for social learning in which students' analogies enhance not only their own conceptual understanding but also that of their peers.

The Universal Learning Style

Cognitive psychologists have devised several rubrics for classifying learning tendencies, including brain hemisphere dominance, Mindstyles, and multiple intelligences. Synectics is especially valuable in classrooms of diverse thinkers because it accommodates the vast array of learning styles in each system.

Modern technology has enabled tremendous advances in mankind's understanding of his own brain. Specifically, the emergence of brain mapping technology (i.e. the electroencephalogram [EEG] and the tachistoscope) made it possible for scientists to pinpoint specific physical sections of the brain responsible for different cognitive functions. Using this technology, scientists discovered that the brain's left hemisphere is logical, analytical, verbal and sequential, while its right hemisphere is intuitive, conceptual, nonverbal and pattern-seeking. A band of neural fibers called the corpus callosum connects the two otherwise independent hemispheres and transmits information between them.[45] Further research has suggested that individuals tend to favor functions controlled by one side of the brain versus the other. That is, they exhibit left- or right-brain dominance.

Regardless of which side of the brain the learner prefers, it is logical to infer that his learning is most complete and integrated when it involves *both* halves of the brain. Metaphor bridges the

[44] Baloche, *The Cooperative Classroom*, 4.
[45] Sanders & Sanders, *Teaching Creativity Through Metaphor*, 8-16.

gap between the two hemispheres in that it "allows imagery to be verbalized and creates imagery for specific facts."[46] The use of metaphorical forms makes Synectics an ideal instructional model for achieving bicameral cooperation.

Anthony Gregorc's Mindstyles approach is very similar to that of brain hemisphere dominance. The Mindstyles system classifies learners according to their perception and organizational styles. As perceivers, learners are either concrete or abstract depending on the extent of their reliance on their physical senses for collecting information. As organizers, learners are either sequential or random depending on the extent of their reliance on order and method in processing information.[47] Abstract and sequential tendencies are characteristic of left-brain activity; concrete and random tendencies are characteristic of right-brain activity.[48] If, as it appears, Gregorc's Mindstyles are little more than a twist on brain hemisphere dominance, then the implications for education are the same for both models. A metaphorically based instructional approach utilizing both hemispheres will appeal to the strengths of learners across the continuum and result in an integrated conceptual understanding.

Howard Gardner's controversial multiple intelligence theory provides a unique perspective on learning styles. Gardner proposed that instead of distinctly right- and left-brain inclinations, learners are predisposed to specific forms of intelligence: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal and naturalist. On one level, these intelligences reflect varying degrees of right- and left-brain dominance that predispose the learner to adeptness with related types of information. On the other hand, despite the prevalence of certain combinations, individual learners have acquired every conceivable combination of

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[46] Ibid., 19.
[47] Michael Jacobs, *EDF 366 Conceptions of Schooling: Context and Process* (Aurora, CO: Lifelong Learning, 2007), 133-4.
[48] Barbara Meister Vitale, *Unicorns Are Real: A Right-Brained Approach to Learning* (Torrance, CA: Jalmar Press, 1982), 12.

these intelligences.[49] It is possible that instead of predisposing an entire brain hemisphere, Gardner's intelligences favor smaller, more specific brain centers (i.e. Broca's and Wernicke's areas for linguistic intelligence).

If Gardner's theory is correct, classrooms consist of even more diverse learners than previously supposed, making the teacher's choice of instructional model of greater consequence. One of Synectics' unique strengths lies in its ability to individualize instruction by empowering the student to construct knowledge based on his own strengths and interests. Linguistic minds may thrive on compressed conflict, while logical-mathematical minds prefer direct analogy and interpersonal minds, the personal analogy. The Synectics procedures include all three mechanisms, thereby meeting the individual needs of all students and drawing on their different strengths to enhance the process. Furthermore, all three metaphorical forms offer the flexibility for students to tailor the content of analogies to their respective domains of intelligence.

Drawbacks

Despite its many benefits for students, the Synectics model has some drawbacks that discourage teachers from using it. For instance, Synectics involves a significant learning curve both for students as participants and teachers as facilitators. Particularly for older students, it takes time to let go of the logical, relevant thinking to which they are accustomed. It also takes time to establish a safe environment where students feel comfortable sharing unusual ideas. Teachers must have faith that they will be able to tie students' analogies back into the original material no matter how far-fetched they may be.[50] Many teachers are uncomfortable creating a classroom where they can no longer predict and influence students' responses.

[49] Ormrod, *Essentials*, 157-9.
[50] Joyce & Weil, *Models of Teaching*, 254.

In many cases, classes are too big for group discussions to be effective.[51] The same students speak up every time, unintentionally discouraging others from contributing. The "making the strange familiar" procedure requires teacher facilitation for at least the first five phases, which precludes breaking the class into smaller groups to encourage greater participation.

Teachers often use metaphor as an instructional model without the added structure of Synectics. Alone, metaphor is a powerful mental tool, but it relies heavily upon the learner's inherent creativity and capacity for abstract thought. Synectics supports all kinds of thinkers. There are drawbacks to every teaching model, but if teachers can creatively minimize the few potential problems Synectics presents, students will benefit significantly from using the complete package.

Conclusion

Socrates, Plato and Aristotle used metaphor as an instructional tool long before science could explain its effectiveness. Synectics applies recent scientific discoveries to improve on the ageless tradition of metaphorical education. It motivates students of all temperaments, edifies students of all levels and accommodates students of all learning styles. Since Synectics codifies the process of creative thinking, teachers need not be Greek philosophers in order to provide students with mind-opening generative learning experiences.

As the educational demands on young children increase, those charged with helping them meet those demands must continuously strive to improve instruction. At the same time, schools are becoming increasingly diverse, making the task of meeting every child's needs more difficult. Even so, No Child Left Behind insists that teachers reach all of the students all of the time. Modern research strongly supports the use of Synectics to reach this goal.

[51] Ibid.

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