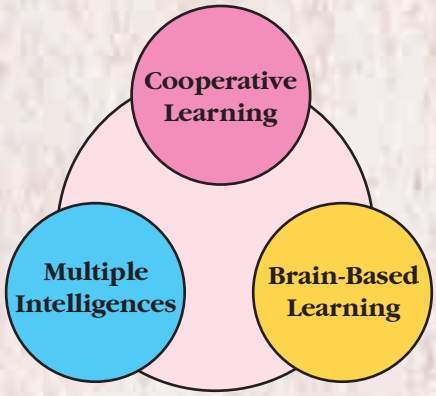
The Kagan Workshops

(2-5 September 2002)

For the last four years, the STU has invited Dr Spencer Kagan and his Associates from the Kagan Institute based in California, USA, to conduct workshops for our teachers and others, starting in 1998 with the topic of Cooperative Learning and then later adding to it Multiple Intelligences and Brain-Based Intstruction. The programme for this year is given in ***Box 1****.*



Box 1
The Kagan Workshops

2 and 3 Sept 2002	4 and 5 Sept 2002
Multiple Intelligences (*Repeated* for those who did not attend it previously)	Advanced Multiple Intelligences (NEW) (MI is a prerequisite. Participants must have attended either Kagan MI 2000 or 2001)
Higher Level Thinking (*Repeated* for those who did not attend it previously)	Brain-Based Instruction (NEW) (A new course for anyone interested)
Kagan Cooperative Learning - Beginning (*Repeated* for those who did not attend it previously)	Advanced Cooperative Learning Academy (For those who must have attended Kagan Cooperative Learning 2000 or 2001)

Some Thoughts on Cooperative Learning, Multiple Intelligences and Brain-Based Learning

1. Cooperative Learning

For readers less familiar with this concept, cooperative learning (CL) is now a generic term referring to different methods of organising classroom structures for students to learn together. In particular, CL refers to the relationship among students (within groups) based on their ability to work together (*interdependence*), to contribute to the tasks of the group (*individual accountability,* without the "free rider effect"), and to interact (*communication*), leading to what may be called a cooperative classroom ethic of peer support (sometimes called *positive interdependence*). In the US, in particular, CL has often been brought in as a possible solution to many of the problems in formal educational settings. Theoretically speaking, the idea of CL may be traced back to the work of early psychologists, particularly that of the Russian psychologist, Lev Vygotsky, whose work was known to the West only when it was published in 1962. Vygotsky (who died in 1934) is often credited with seeing learning as a *social process*, which therefore makes cooperative or collaborative learning important.

For this reason, CL is often contrasted with *competition* (ie. students competing with each other to be the best) and working *individualistically* (with each student paying no attention to the others in the class). As teachers, we know that which learning/instructional structure students prefer has to do with their perceptions of each other in the class, of their teachers, of being in school, and also their level of self-esteem.

Today, in the pedagogical literature (see **Box 4** for references), there are several approaches to CL, and Kagan's is among the ten methods that Johnson *et al* (2000) have identified as receiving most attention in the US. This was reported in their massive meta-analytic study of CL methods, entitled "Cooperative learning methods: A meta-analysis". They labelled Kagan's method as "Cooperative Learning Structures".

In their study, Johnson *et al* (2000) were interested in several research questions, among which was the important question of whether cooperative learning, competition and individualistic learning have differential effects on learning. In another meta-analytic study, Qin *et al* (1995) examined the effects of CL vs competitive efforts on problem-solving. Yet another research study by Stevens and Slavin (1995) used a sample of 1,102 students of grades two through six, from five elementary schools, to study the effects of CL on students' achievement, attitudes and social relations. The results from the Stevens and Slavin (1995) study and from Qin *et al*'s and Johnson *et al*'s meta-analyses give a positive picture of CL as a classroom strategy. Some of the results are highlighted (selectively) in **Box 2** for easy reading. *Effect size,* a statistic more often used today than before to report experimental results in educational research, is an estimate of the magnitude of the gain that one group has made on the dependent variable (eg. problem-solving) in relation to the other (comparison) group. Then the reported effect size is converted in this STU report into a percentile rank to give a practical meaning to the notion of effect size. For example, in the Qin *et al* study in

Box 2, the finding is to be interpreted like this - the average student (ie. at the 50th percentile) in the cooperative learning class did better (in problem-solving, the dependant variable in this case) than 71% of the students in the competitive-condition (comparison) class. Put in another way, if an average student in the regular class (the comparison group) were to study in the CL class instead, he/she would have moved up 21 percentile points. In the same way, in the Johnson *et al* study, the result reported is to be read thus: the average student in the cooperative group did better than 81% of those in the competitive group on a measure of achievement. In other words, having been in the cooperative group made a difference of some 31 percentile points for the average student, which is a lot.

Box 2
Selected Effect Sizes

Study	Sample size	Effect size	Percentile
Coop vs Competition (Qin *et al*, 1995)	63 studies	+0.55	71
CES vs Non-CES (Stevens & Slavin, 1995)	400+ per group	+0.42	66
Coop vs Competition (Johnson *et al*, 2000)	162 studies	+0.82	79

2. Multiple Intelligences

It was Howard Gardner of Harvard University in the US who, based on his research on the nature of human intelligence and educational processes, among other topics, developed the theory of multiple types of intelligence in his book, *Frames of Mind* (1983). In this book, he proposes that there are seven types of distinct intelligences and that human beings possess combinations of these in varying degrees. The general idea of other attributes underlying the factor of intelligence or IQ, as it is often called, has been around for some time, mooted by other psychologists, but it was Howard Gardner who stated the idea explicitly and boldly. This conceptualization openly challenges the traditional view that intelligence or IQ is one unitary factor. In the 1990s he added an eight intelligence to his list of seven – naturalist intelligence, which has to do with one's sensitivity to the natural environment and to patterns in nature (see Box 3). These intelligences are potentials, which can be developed or made use of in individuals, depending on cultural values, personal decisions, and also opportunities to develop them. The implications for education are therefore manifold and important. Each student then has his unique strengths, and no two students are exactly alike. The purpose of teaching is therefore to use varying approaches to help students develop and maximize different aspects of their potential. The opportunity to learn is very important.

Box 3
Howard Gardner's Eight Intelligences

1. Verbal-linguistic intelligence
2. Logical-mathematical intelligence
3. Visual-spatial intelligence
4. Bodily-kinesthetic intelligence
5. Musical intelligence
6. Interpersonal intelligence
7. Intrapersonal intelligence
8. Naturalist intelligence

3. Brain-Based Learning

As teachers, we have always suspected that the structure or make-up of the brain has much to do with learning. For a long time, there has been the brain *laterality* idea (eg. *left*-hemisphere-dominant people tend to do well as problem-solvers, etc, and *right*-hemisphere-dominant people tend to paint and draw well, etc.). This idea is now regarded by neuroscientists as folk theory and not a neuroscientific one (Bruer, 1999). However, in the last decade or so, much progress been made in neuroscience to study, among other things, the functions of the brain in more graphic terms through brain scanning and imaging, and perhaps there is now a better understanding of the relationship between the brain and learning. A field called *brain-based learning* (or sometimes BBL) is emerging in the US. BBL is essentially an approach that suggests how the brain naturally learns given its structure and functions. STU will leave it to the Kagan Workshop lecturers to explain the link between the brain and education.

Concluding Remarks

Finally, what is the connection between and among Cooperative Learning, Multiple Intelligences, and Brain-Based Learning? Kagan created the concept of "structures", and as Kagan stated in one of his workbooks, the "Kagan structures allow an easy integration of cooperative learning, multiple intelligences, and character development into any lesson at any grade level". As Brewer (in "Brain-based learning: The new learning model?", 1999) says, citing others, the brain is social and it searches for meaning in patterns in which emotions are critical; then the connection lies in the fact that a few of the eight intelligences also have to do with sensitivity to interpersonal relations and to patterning. The social relations aspect of CL is obvious - CL is based essentially on the dynamics of groups, and one of the factors for groups to work well is the ability of group members to communicate effectively, using their interpersonal skills.

Box 4
References for Further Reading

Bruer, John T, In search of … Brain Based Learning, *Phi Delta Kappan,* 80(9), 1999.

Brewer, J. Brain-based learning: The new learning model?, 1999.

Gardner, Howard. *Frames of Mind: The Theory of Multiple Intelligences.* 1983 & 1993 editions. New York: Basic Books.

Gardner, Howard. *Intelligence Reframed: Multiple Intelligences for the 21st Century.* New York: Basic Books.

Johnson, DW; Johnson, RT and Stanne, MB. Cooperative learning methods: A meta-analysis, 2000.

Qin, Z; Johnson, DW; and Johnson, RT. Cooperative versus competitive efforts and problem-solving. *Review of Educational Research,* 65(2), 1995.

Stevens, RJ and Slavin, RE. The cooperative elementary school: Effects on students' achievement, attitudes and social relations. *American Educational Research Journal,* 32(2), 1995.