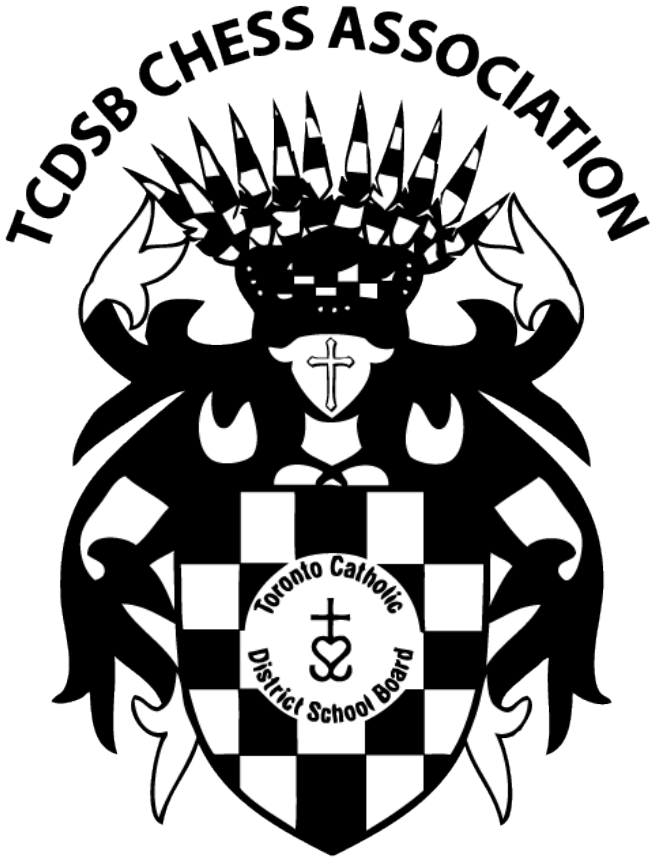

Chess Makes Kids Smarter

(Reprinted from the November 1982 issue of Chess Life magazine)

BY DR.GERARD DULLEA

Chess lovers have long contended that chess should be a valuable classroom tool. It can provide an intellectually stimulating, rewarding activity, but it can also teach discipline, concentration, planning and all the other good things that go into successful chess.

In 1977, however, the National Institute of Education (NIE) argued against this position, saying in effect that good students and good chess players tend to be the same group simply because they are more intelligent and more intellectual than their classmates. NIE contended that transfer of skills is minimal, arguing that time spent on one skill detracts from the learning of another.

Some months later Dutch scholar Adriaan de Gioot wrote a rebuttal of NIE'sposition, basing his arguments on a careful two- study in Belgium. Now, thanks largely to Harry Lyman of Massachusetts, in behalf of the

Massachusetts Chess Association and the American Chess Foundation. The Flemish source of de Groot's argument has been translated into English. The Belgian study was the doctoral thesis of Johan Christiaen, titled "Chess & Cognitive Development.'' It was a carefully controlled experiment with 20 students in the fifth grade in 1975, following them through the sixth grade the next year. As might be

expected of a foundation for a doctorate in psychology, the test was carefully designed and executed, complete with a control group and other features of good experimentation.

Christiaen's aim was to use chess to test jean Piaget's theory about cognitive development, or intellectual maturation. Piaget holds that an important growth period occurs approximately between the ages of 11 and 15. In this stage, the child moves beyond physical trial and error and begins hypothesizing and deducing, developing more complex logic and judgment. In Piaget's terms, the youngster moves from the "concrete" stage to the "formal" stage. Piaget further contends that the environment of a child can speed up or slow down the maturation. So Christiaen proposed to vary environment with either chess or no-chess. If chess were the significant variable between two groups of youngsters, any significant difference in the development of students could be attributed to enrichment brought by chess to their environment. And it worked!

In the words of Harry Lyman, "Learning chess makes kids smarter in the classroom!"

On 42 Friday afternoons, after school, Christiaen taught chess to 20 boys randomly selected from a group of 40. The other 20 were the control group, the one that would be compared. He did his best to keep these students ignorant of their experimental In testing after these two years, the chess, group scored somewhat better than the control group on various of Piaget's tests for cognitive development. More of a difference, however, was evident in their regular school testing! In the school testing, the chess group did significantly better in both the fifth grade tests and (somewhat less so) in the sixth grade tests.

Christiaen notes that some of this difference may be due to what Robert Rosenthal of Harvard calls the "Pygmalion effect.'' That is, teachers who may give special treatment to "special" students may get special results from those students.

On the other hand, classroom testing was supported by standardized testing administered by an outside agency, which did not know the identities of the two groups. On these tests too, the chess group performed better than the control group.

This study by Dr. Christiaen needs support, extension and confirmation. And other tests can be made too. For the moment, however, we have scientific support for what we have known all along - chess makes kids smarter!

Reprinted from the November 1982 issue of Chess Life magazine.

Chess Is Cool for Kids!

Other Studies Showing that Chess is Good for Kids

"Chess in Education Research Summary" by Robert Ferguson (1995). A 14-page summary of key chess research.

"Chess Improves Academic Performance" summary of NY School Chess Program.

"The Importance of Chess in the Classroom", Atlantic Chess News, 1990 (Michael D.

Wojcio). Wojcio teaches chess to slow learners in 5 NJ schools and this describes his program and the benefits.

"Chess and Education" (John Artise). After 2 years of psychological research in chess, Artise found cognitive improvements in memory, logic, observation and analysis, and operant conditioning.

"The Effect of Chess on Reading Scores" by Stuart Margulies, Ph. D.

"Teaching the Fourth R (Reasoning) Through Chess" (Robert Ferguson). A 1979 project teaching the gifted (grade 7-9) in Bradford Pa. Statistical "proof" that chess increases thinking scores. Also, includes description of teaching program.

"Chess Makes Kids Smart" (Anne Graham-PARENTS-Dec 1985). Urges parents to introduce their kids to chess and quotes work of Pete Shaw, Jeff Chesin, Bob Cotter, etc.

"Chess Makes Kids Smarter" (Dr. Gerard J. Dullea).

"Chess as a Way to Teach Thinking" (Diane Horgan).

These are only scratching the surface. In the Netherlands, the Dutch found that kids who play chess overall do 8% better in mathematics and science compared to kids who didn't play (The statistic for girls alone is a difference of 12%).

Chess in the Schools

Chess (long embraced by the Russians and Europeans who have taught the game as part of their educational curriculum) has now moved as part of the curriculum in hundreds of schools in our Northern neighbor, Canada. They have seen the benefits of children learning the game.

But these reasons don't compel children to take up the game. As a chess coach, I have seen attendance swell in the school chess clubs I teach. The company I work for in Phoenix, AZ, has seen a 20% annual growth in children's chess participation from its onset eight years ago. When I started teaching chess five years ago, we would hold a scholastic tournament with 70 players. When we had a hundred and fifty entrants we thought it was big. This year (2004) in the eight tournaments we've held, the average attendance exceeded 350 in 5 sections, and that's only from the greater Phoenix area. The Arizona State Championship and the Arizona Governor's Cup each saw close to 600 entrants while the recent U.S. Chess Federation's Elementary Championship was close 2100 children in attendance.

Kids are Attracted to Chess

So why are children attracted to chess? I believe that it appeals to our (their) inherited, individualistic, competitive nature. As a child grows, he/she wants to stand on their own, away from any parent or guardian and at the same time, when achieving a goal, say to them, “Hey, look what I can do!”

Unlike many team sports, chess players do stand on their own. If they lose a game, it is their fault, their failure and no one else’s. They cannot blame their loss on a teammate’s failure to pass the ball, miss the goal, or in being forced to play no matter how bad at the game the teammate may be. At the same time, when they win, it is also on their shoulders.

It is because they were the ones who had put a little extra effort into learning the intricacies of the game. They are the ones who out thought their opponent in a long drawn out struggle or a short trap. And after their match, that win can create an adrenaline high that is unmatched except at the professional levels of sports.

Children who take up chess harbor deep emotions for the game. Once learned, it is with them for life. Yet, it is only those who play competitive chess who will develop into better players quicker than those who just learn the moves of the game. But is this healthy? Isn’t fostering a competitive attitude in our children supposed to be a bad thing? I don’t believe so, at least not in the competitive chess arena.

I’ve seen kids in chess grow up to become great kids. Kids who are jumpy, calm down; Kids who are overly hyper, sit and play for hours; Kids who are too emotional, learn to take losses and come back to play again; Kids who are over achievers, learn that there is always someone else out there who can beat you; Kids who never believe that they can perform orexcel at anything, win games. Kids who want to win at all costs learn that winning isn’t everything. And I’ve seen kids, win or lose, connect with their parents at an indescribable level when they walk out of the tournament hall.

I believe chess is good for you and is great for children.

And in the immortal words of the 13th World Chess Champion, Gary Kasparov:

“If you think it’s just a game, then you’re not playing it right!”

Benefits of Chess for Children

By Dean J. Ippolito

Chess has long been considered a way for children to increase their mental prowess, concentration, memory, and analytical skills. To anyone who has known the game, it comes as no surprise that these assumptions were actually proven in several studies on how chess can improve the grades of students.

Although chess has been shown to increase the mental abilities of persons of all ages, the main studies have been done with children. This is first for the obvious reason that students are constantly tested

anyway, and therefore the data need only be analyzed, and secondly because children's mental development is more rapid and can be more easily measured than persons at a later life stage.

Early Conclusions

After several informal studies were done in the early 20th century on the effect that chess has on logical thinking and other such functions, a primary conclusion was drawn that chess does in fact not only demand such characteristics, but develops and promotes them as well. John Artise in Chess and Education wrote "Visual stimuli tend to improve memory more than any other stimuli; chess is definitely an excellent memory exerciser the effects of which are transferable to other subjects where memory is necessary."

Improved memory is just the tip of the iceberg. Reports from students, teachers, and parents noticed the academic benefits of chess on math problem solving skills and reading comprehension, an increase in self-confidence, patience, logic, critical thinking, observation, pattern recognition, analysis, creativity, concentration, persistence, self-control, sportsmanship, responsibility, respect for others, self-esteem, coping with frustration, and many other influences which are difficult to measure but can make a difference in student attitude, motivation, and achievement.

With this in mind, legislation in the U.S. in 1992 promoting and encouraging the incorporation of chess into the curriculum of schools was passed. The U.S. joined the more than 30 countries which already had chess included in some form in their school curricula. Today it is estimated that that number has more than doubled.

In part due to the educational community, which has noted the increased academic performance of students participating in chess, there has been an explosion in the number of children playing chess in the U.S. This popularity can be seen in the record number of players competing in

National Scholastic Events. Scholastic chess players are increasing in numbers more rapidly than adult chess players; scholastic chess membership within the United States Chess Federation now represents more than 50% of the total members. An estimated 250,000 children in the U.S. are introduced every year through the school system to the basics of the game. As the number of children playing chess grows, it has become necessary for actual tests to be performed to determine the benefits of chess. Luckily, these studies have already been done to confirm the hypothesis that chess is linked to increased grades in school; far too many to be listed here. I will touch on some of the more outstanding, thorough studies, all of which have similar findings.

Case Studies

As reported in Developing Critical Thinking Through Chess, Dr. Robert Ferguson tested students from seventh to ninth grades from the years 1979-1983 as part of the ESEA Title IV-C Explore

Program. He found that non-chess students increased their critical thinking skills an average of

4.6% annually, while students who were members of a chess club improved their analytical skills an average of 17.3% annually. Three separate tests to determine how chess affects creative thinking were also done as part of the same study. It concluded that on average, different aspects of creative thinking had improved at a rate two to three times faster for chess playing students, as opposed to their non-chess playing counterparts.

Subsequent studies by Dr. Ferguson further supported these original conclusions. In the Tri-State

Area School Pilot Study conducted in 1986 and Development of Reasoning and Memory

Through Chess (1987-88) chess playing students showed more rapid increased gains in memory, organizational skills, and logic.

In Zaire the study Chess and Aptitudes, was conducted by Dr. Albert Frank at the Uni Protestant

School, during the 1973-74 school year. Using sufficiently large experimental and control groups, Dr. Frank wanted to confirm if the ability to learn chess is a function of special aptitude, perceptive speed, reasoning, creativity, or general intelligence. He hypothesized that in order to learn chess well one must have a high level of one or several of these abilities. He also wanted to see to what extent learning chess could influence the development of these abilities. His results were astonishing, yet predictable. There was a significant correlation between the ability to play chess well, and spatial, numerical, administrative-directional, and paperwork abilities. It showed that the ability in chess is not due to the presence of only one or two abilities but that a large number of talents all work together in chess. The conclusion was that students participating in the chess course show a marked development of their verbal and numerical aptitudes.

Furthermore, this was noticed in the majority of chess students and not only those who were better players.

A study conducted in four large elementary schools in Texas in 1997 further demonstrated the positivism of chess. Through the Texas Assessment of Academic Skills (TAAS), the study was done to test the difference that chess club had on standardized tests. These schools were selected since all had a chess program in existence for a minimum of two years. The chess clubs met for one hour after school one day per week. Since a few thousand total students took the test and all types of students were tested from special education students to gifted and talented students, the sample was large and diverse enough to make a concrete conclusion. There were significant improvements in both reading and math for all grade levels and all classes of students (regular, gifted and talented, special education, academically able, etc.). Through the Texas Learning Index, or TLI, it was determined that on average the students who played chess improved in reading and mathematics at a rate between 1.5 and two times faster than non-chess playing students.

In terms of verbal improvement specifically, a study by Dr. Stuart Margulies from 1991 addressed this. The study conclusively proved that students who learned chess enjoyed a significant increase in their reading skills. "Margulies Study is one of the strongest arguments to finally prove what hundreds of teachers knew all along-chess is a learning tool. (Inside Chess, February 1994).

"Can chess promote earlier intellectual maturation" was the question posed in the Chess and

Cognitive Development study directed by Johan Christiaen from the 1974-76 school years in

Belgium. The results again clearly confirmed that the group of chess playing students showed significantly more improvement then the non-chess playing students. In 1982, Dr. Gerard Dullea mentioned this study and proclaimed "…we have scientific support for what we have known all along-chess makes kids smarter! (Chess Life, November 1982) In a similar study done in a test series in New Brunswick, Canada called Challenging Mathematics, the mathematics curriculum used chess to teach

logic from grades 2 to 7. The average problem solving score in the province increased from 62% to 81%. In Playing Chess: A Study of Problem-Solving Skills in Students with Average and Above Average Intelligence by Philip Rifner from the 1991-92 school term, the hypothesis that learning general problem solving skills in chess could then be applied to other domains was affirmed.

Conclusions

We can now say with full confidence that chess has been PROVEN to enhance creativity, problem solving, memory, concentration, intellectual maturity, self-esteem, and many other abilities that a parent or teacher would desire. This proves what all of us involved in chess have been saying for years…chess makes you smart!