

# The Benefits Of Chess

By: John Saade and Todd Ray



# At-Risk Youth Crises



According to one study, 15 percent of the youth in juvenile detention were intellectually gifted.

**Source:** Seeley, K. (2003). High risk gifted learners. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (3rd ed., pp. 444-451). Boston: Allyn & Bacon

Talented Children and youth who are disruptive, or violent, or delinquent, or just poor students are a paradox worthy of exploration in a search for new solutions or explanations.

**Source:** Seeley, K. (2003). High risk Boston: gifted learners. In N. Colangelo & G. A. Davis (Eds.), *Handbook of gifted education* (3rd ed., pp. 444-451). Allyn & Bacon.

Right-hemispheric, creative learners often become at-risk for underachievement, failure, delinquent behavior and dropping out of school.

**Source:** Linda Kreger Silverman, Ph.D. *Institute for the Study of Advanced Development*. Article: "At-Risk Youth and the Creative Process."

The majority exhibited a 'fluid' or 'spatial' learning style, in which the right hemisphere is favored over the left hemisphere. Such children are often unrecognized as gifted, as sequential methods of instruction fail to reach them. The traditional classroom situation appeared to have suppressed these students' high fluid abilities in the process of their learning of academic skill.

**Source:** Harvey, S., & Seeley, K. (1984). An investigation of the relationships among intellectual and creative abilities, extracurricular activities, achievement, and giftedness in a delinquent population. *Gifted Child Quarterly*, 28, 73-79

# The Visual-Spatial Learner



*"One-third of the population thinks in images. You may be one or live with one. If you teach, it is absolutely certain that some of your students—probably the ones you aren't reaching—are visual-spatial learners."*

*Linda Kreger Silverman, Ph.D*

## **At-Risk in Most Schools**

- Study Conducted with 1,000 Spatially Gifted Students found them to be "Disenchanted with Education." **Source:** Gohm, Humphrey, and Yao (1998)

## **Non-Sequential**

- Think in Pictures – Not Words
- They DO NOT learn in a step by step manner, so "show your work" may be impossible for them.
- Rote learning, therefore, becomes grueling and painful.

## **Result**

- Academic, Social, and Intra-personal Failure.

## AUDITORY-SEQUENTIAL

- Thinks primarily in words
- Has auditory strengths
- Relates well to time
- Is a step-by-step learner
- Learns by trial and error
- Progresses sequentially from easy to difficult material
- Is an analytical thinker
- Attends well to details
- Does well at arithmetic
- Learns phonics easily
- Can sound out spelling words
- Is well-organized
- Can show steps of work easily
- Excels at rote memorization
- Has good auditory short-term memory
- May need some repetition to reinforce learning
- Learns in spite of emotional reactions
- Is comfortable with one right answer
- Enjoys algebra and chemistry
- Is academically talented
- Is an early bloomer

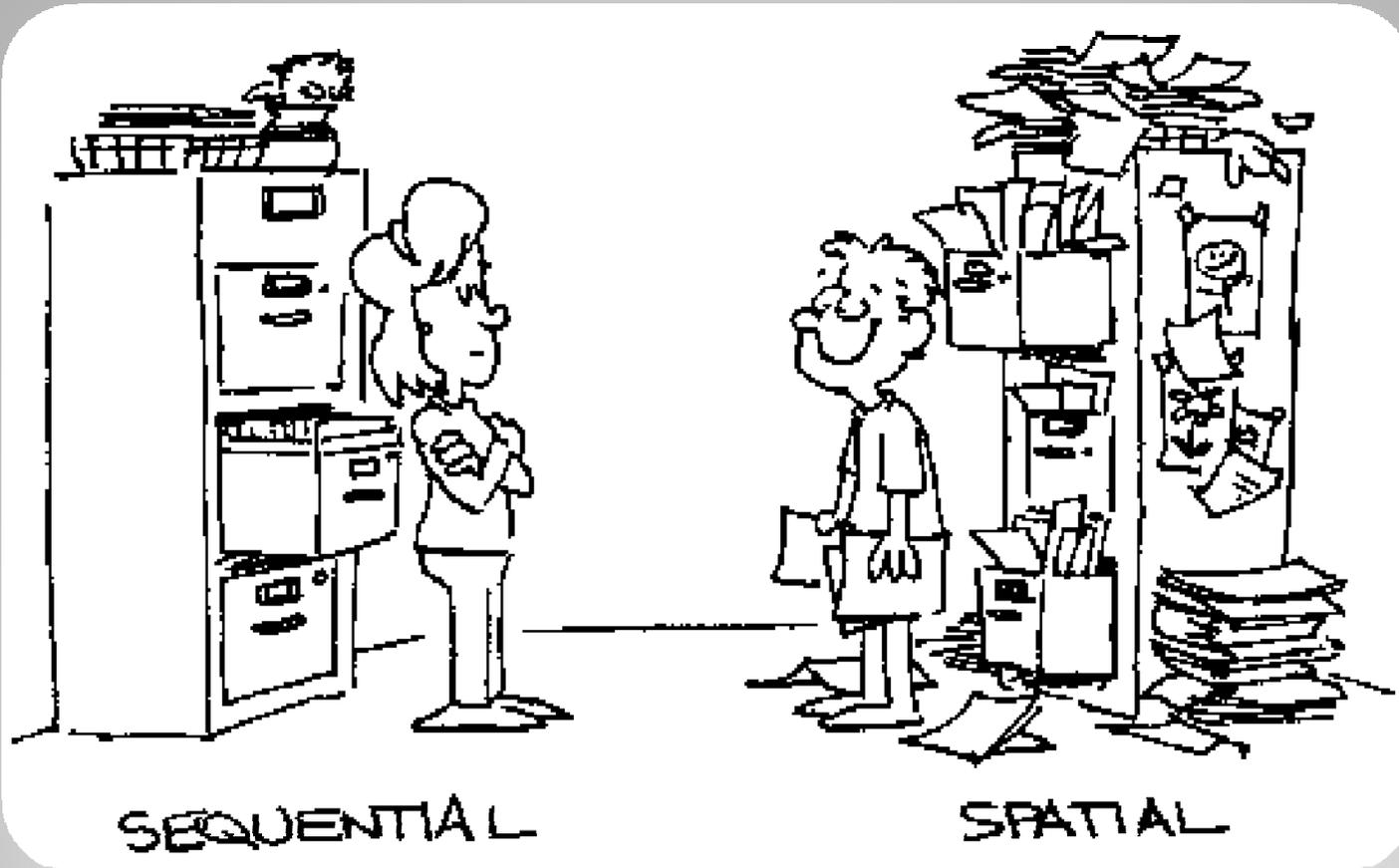
## VISUAL-SPATIAL

- Thinks primarily in pictures
- Has visual strengths
- Relates well to space
- Is a whole-part learner
- Learns concepts all at once
- Learns complex concepts easily; struggles with easy skills
- Is a good synthesizer
- Sees the big picture; may miss details
- Is better at math reasoning than computation
- Learns whole words easily
- Must visualize words to spell them
- Creates unique methods of organization
- Arrives at correct solutions intuitively
- Learns best by seeing relationships
- Has good long-term visual memory
- Learns concepts permanently; is turned off by drill and repetition
- Develops own methods of problem solving
- Generates unusual solutions to problems
- Enjoys geometry and physics
- Is creatively, mechanically, emotionally, or technologically gifted
- Is a late bloomer



**Source:** Visual Spatial Resource Center

# Spatial vs. Sequential Learner



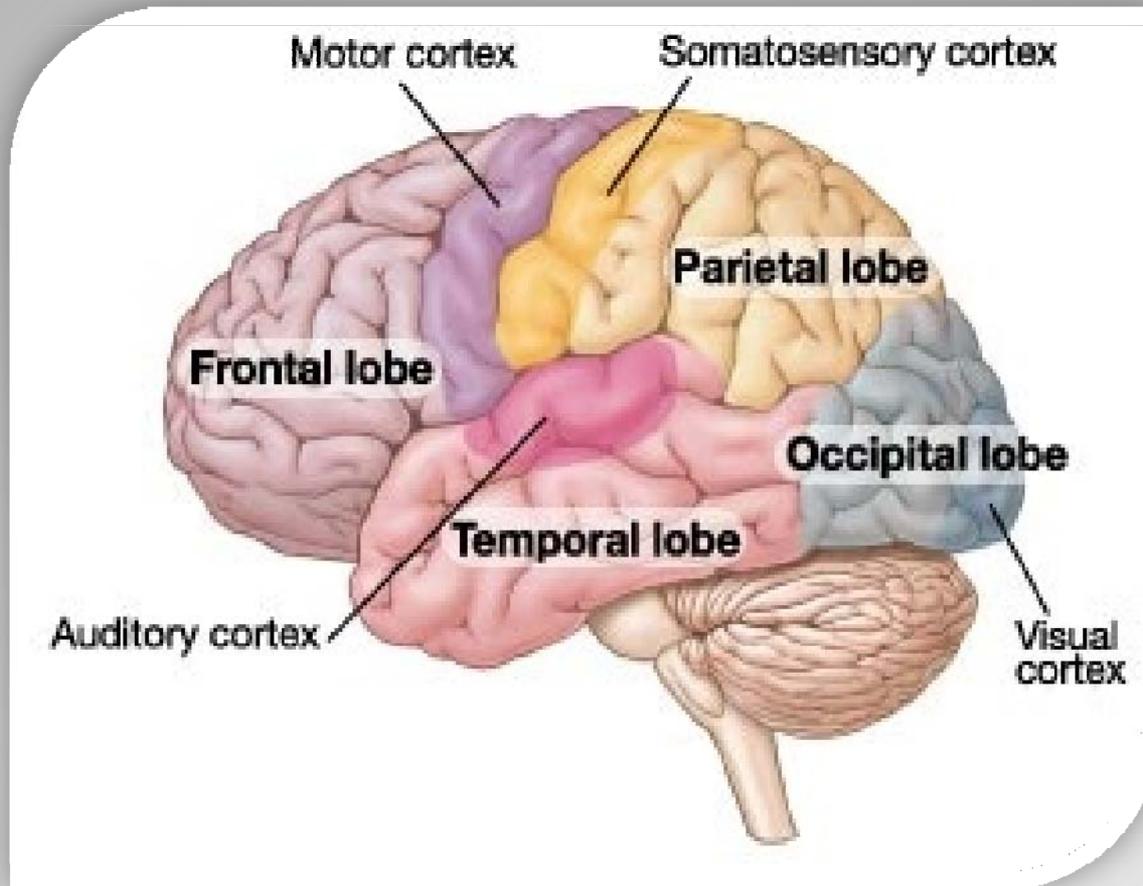
# Why Chess?



**The benefits gained from Chess engagement have the potential to:**

- Strengthen and increase the neural connections in areas of the Brain.
- Reinforce academic, social, and intra-personal skills
- Nurture the Human Spirit.
- Re-Educate (What a Philosophy)!
- Save Lives

# Effects of Chess on the Brain



# Academically, Chess Promotes Higher Order Thinking Skills



Pattern Recognition

**Sequencing**

Planning

**Problem Solving**

Analyzing and Evaluating

**Memory Retention-  
"Chunking"**

Deduction



# Socially, Chess Promotes Positive Peer Interactions



Good Sportsmanship

**Turn Taking**

Patience

**Competition**

Respect

**Cooperation**

Bonding



# Intra-personally, Chess increases self-awareness



Increased Tolerance of Frustration Levels

**Perseverance**

Self-Respect

**Elevation of Self-Esteem**

Impulse Control

**Appropriate Risk Taking**

Intuition



# THE KARATE KID EFFECT



# Chess Studies



In a Texas study, 1994-1997, of 571 regular (non-honors) elementary school students, found the 67 who participated in a school chess club showed twice the improvement of 504 non-chess players in Reading and Mathematics standard scores between third and fifth grades on the Texas Assessment of Academic Skills (**Source:** James Liptrap: "Chess and Standardized Test Scores" *Chess Life* March 1998 pp 41-43).

In a Zaire study conducted by Dr. Albert Frank, employing 92 students age 16-18, the chess-playing experimental group showed a significant advancement in spatial, numerical and administrative-directional abilities, along with verbal aptitudes, compared to the control group. The improvements held true regardless of the final chess skill level attained (**Source:** Robert Ferguson, "Chess in Education Research Summary," paper presented at the Chess in Education A Wise Move Conference at the Borough of Manhattan Community College, January 12-13, 1995).

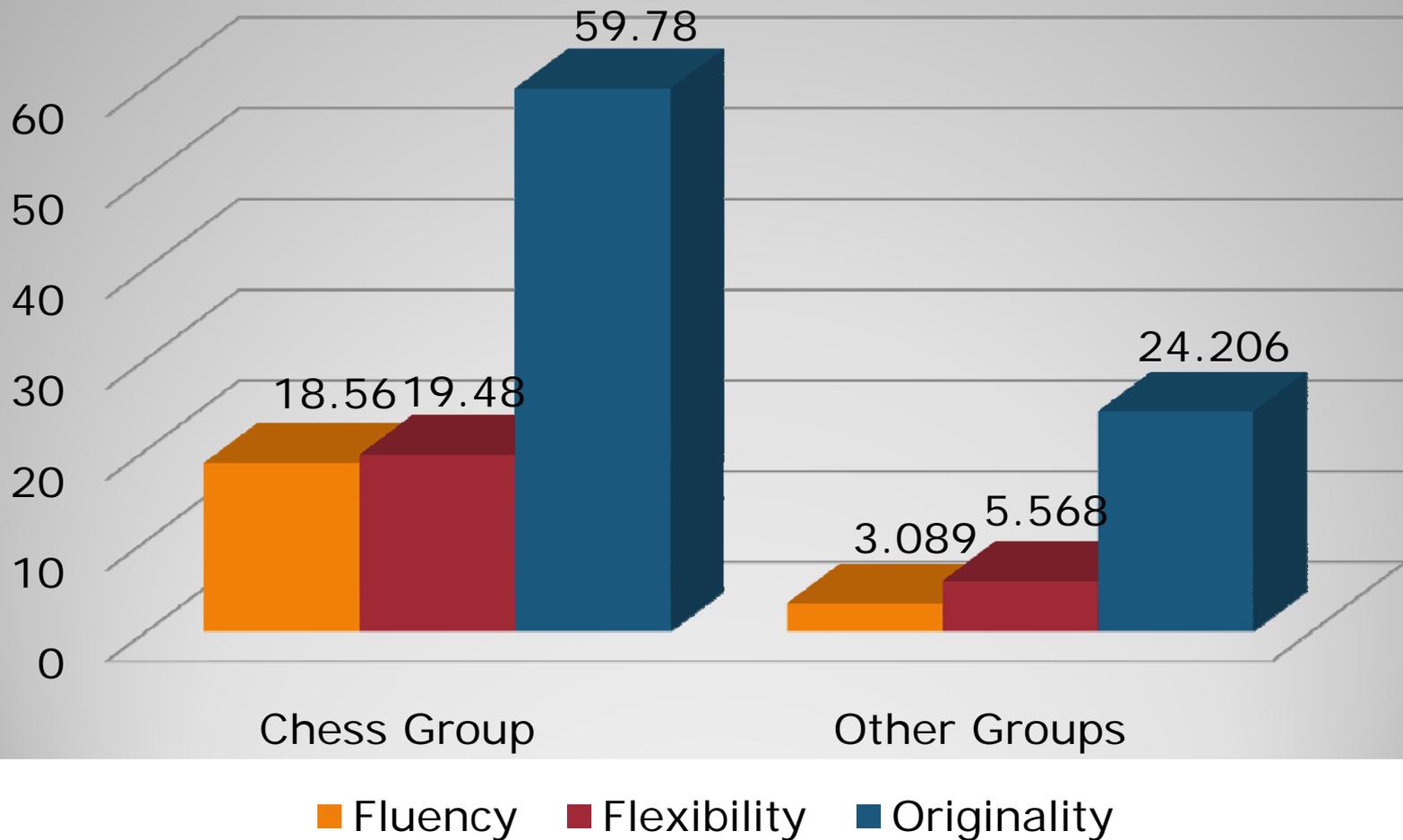
A four-year study in the United States, has the chess-playing experimental group consistently outperforming the control groups engaged in other thinking development programs, using measurements from the Watson-Glaser Critical Thinking Appraisal and the Torrance Tests of Creative Thinking (**Source:** Robert Ferguson, "Chess in Education Research Summary," paper presented at the Chess in Education A Wise Move Conference at the Borough of Manhattan Community College, January 12-13, 1995).

The Venezuela "Learning to Think Project," which trained 100,000 teachers to teach thinking skills, and which involved a sample of 4,266 second grade students, reached a general conclusion that chess, methodologically taught, is an incentive system sufficient to accelerate the increase of IQ in elementary age children of both sexes at all socio-economic levels (Ferguson, 1995, p.8).

# Increase In Creativity



Comparison Between Chess & Non-Chess Students



# Dr. Ferguson's Conclusion



Dr. Robert Ferguson (1995) summarizes the findings:

**"Why does chess have this impact [on children]?"**

by listing seven significant factors:

1. Accommodates all **modality strengths**.
2. Provides **problems for practice**.
3. **Immediate punishments and rewards** helps with problem solving.
4. **A Pattern or thinking** system that, when used faithfully, **breeds success**.
5. **Competition** fosters interest, promotes mental alertness, challenges all students, and elicits the highest levels of **achievement**.
6. Chess provides a **structured learning environment** that can have a positive affect on student's attitudes toward learning.
7. Chess supplies a **variety and quality of problems** (Ferguson, 1995, p. 12).

# Progress with Chess<sup>™</sup>



Non-Profit Chess Organization serving over 50 area Cleveland Schools and 500 students per year since 2001.

## **2005-2006 study**

- AEMS+ from 1.986 to 2.404
- AERS+ from 2.185 to 2.346
- AMSMS+ from 1.878 to 2.083

Source: Progress with Chess and the Cleveland School System

# Chess In Education



- Former U.S. Secretary of Education Terrell Bell encourages knowledge of chess as a way to develop a preschooler's intellect and academic readiness (Bell, 1982, pp. 178-179).
- Chess is found as required curricula in nearly 30 countries (Ferguson, 1995).
- A study in the NYC schools- 1999, measured the impact of chess on the emotional intelligence of fifth graders. The overall success rate in handling real life situations with emotional intelligence was 91.4% for the children who participated in the Chess-in-the-Schools program. In contrast, those who were not involved with the chess program had an average overall success rate of only 64.4% (Palm Report)
- The mathematics curriculum in New Brunswick, Canada, has a text series called "Challenging Mathematics" which uses chess to teach logic from grades 2 to 7. Using this curriculum, the average problem-solving score of pupils in the province increased from 62% to 81%. (*Educational Technologies* Article: Internet Source)

# Research Summarized: Chess in the New York City Schools.



The New York City Schools Chess Program included more than 3,000 inner-city children in more than 100 public schools between 1986 and 1990. Christine Palm (1990) states that the program has proven:

- Chess dramatically improves a child's ability to think rationally.
- Chess increases cognitive skills.
- Chess improves children's communication skills and aptitude in recognizing patterns, therefore: Chess results in higher grades, especially in English and Math studies.
- Chess builds a sense of team spirit while emphasizing the ability of the individual.
- **Chess teaches the value of hard work, concentration and commitment.**
- Chess instills in young players a sense of self-confidence and self-worth.
- Chess makes a child realize that he or she is responsible for his or her own actions and must accept their consequences.
- Chess teaches children to try their best to win, while accepting defeat with grace.
- Chess provides an intellectual, competitive forum through which children can assert hostility, i.e. "let off steam," in an acceptable way.
- Chess can become a child's most eagerly awaited school activity, dramatically improving attendance.
- Chess allows girls to compete with boys on a non-threatening, socially acceptable plane.
- Chess helps children make friends more easily because it provides an easy, safe forum for gathering and discussion.
- **Chess allows students and teachers to view each other in a more sympathetic way.**
- Chess, through competition, gives kids a palpable sign of their accomplishments.
- Chess provides children with a concrete, inexpensive and compelling way to rise above the deprivation and self-doubt which are so much a part of their lives (Palm, 1990, pp. 5-7).

# Chess = Math & Reading Skills



<b>Reading and Math</b>	<b>Chess</b>
Rapid Deployment of Schemata	Rapid Deployment of Schemata
Recognition of Patterns	Recognition of Patterns
Setting Goals	Setting Goals
Active Questioning	Active Questioning
Drawing on Background Knowledge	Drawing on Background Knowledge
Create Mental Images	Create Mental Images
Re-Evaluate	Re-Evaluate
Reflection	Reflection
Utilize Metacognition	Utilize Metacognition

# State Standards Addressed



**Visual:** Recognizes Objects; Focus and Tracking

**Fine Motor:** Manipulation of Piece Arrangement

**Behavior:** Cooperates with Peers and/or Adults Within Structured Social Activities.

**Spatial Sense (Geometry):** Following Lines of Play

**Pattern Recognition (Algebra):** Analyzes and Determines Successful Patterns for Play.

**Data Analysis:** Utilizes Charts and Graphs to Locate and Interpret Information (i.e., Organizing, Observation, Identification of Objects).

# Pawn Movement Lesson Plan



## **Concept / Topic To Teach:**

Pawn Structure and Mobility

## **Standards Addressed:**

Utilization of problem solving and spatial reasoning skills

## **Goal:**

Students will know how to successfully utilize and create a pawn structure for effective play.

## **Specific Objectives:**

Students will be introduced to the pawn and how it is utilized.

Students will demonstrate how to move in vertical, horizontal, and diagonal directions.

## **Required Materials:**

Chess demonstration board and pawn pieces

## **Step-By-Step Procedures:**

Introduce the pawn.

Introduce students to the abilities that the pawn is capable of.

Demonstrate to students that *any* pawn can move one or two squares on its initial move, but after that it is only one square at a time.

Demonstrate to students that a pawn can *only* attack in a diagonal manner.

Demonstrate to students how a pawn can effectively move up or down the Chessboard.

## **Applications Addressed:**

Spatial Reasoning Skills (i.e., Geometry), Pattern Recognition, Statistics, and Probability.

## What Educators are Saying



**The article "Chess Improves Academic Performance" from the NY School Chess Program features a number of testimonies from school principals, including:**

"Not only have the reading and math skills of these children soared, their ability to socialize has increased substantially, too. Our studies have shown that incidents of suspension and outside altercations have decreased by at least 60% since these children became interested in chess."

*Assistant Principal Joyce Brown (Source: Roger Langen- The Reporter: Putting a Check to Poor Math Results, 1992).*

"It's the finest thing that ever happened to this school... Chess makes a difference... what it has done for these children is simply beyond anything that I can describe." *(Source: Palm Report)*

"Chess has taught my students more than any other subject"  
*(Source: Dr. Fred Loveland)*

# A Parent's Input



# One Move at a Time Life Lessons

Orrin C. Hudson (*Besomeone.org*)



- "Work Within the rules"
- "Watch the Moves other People Make."
- "Respect Your Opponents."
- "Visualize."
- "Know Your Strengths and Weaknesses."
- "Always Look for a Better Move."
- "Every Action has a Consequence."
- "Learn from Losing."
- "Use All of Your resources."
- "Think Outside the Box"

# Applying the Principles of Chess to Therapeutic Interventions



Emotional Skills	Cognitive Skills	Behavioral Skills
Controlling Impulses	Self-Talk	Non-Verbal Communication
Delaying Gratification	Problem Solving	Positive Sportsmanship
Expressing Feelings	Intuition	Respect
Reducing Stress	Understanding Perspectives	Positive Attitudes

# Chess and Re-Ed Principles



- Trust is Essential
- Competence Makes a Difference
- Self-Control can be Taught
- The Group is Important
- A Child Should Know Some Joy in Each Day
- Intelligence can be Taught

Dr. Nicholas Hobbs



# Can Chess Save Lives?



- Ask Robert Morrell
- Ask The Silver Knights
- Ask Phillip Margolin
- Ask Eric Hicks
- Ask Robert Cury
- Ask Me

# CHESS BOOKS



- ONE MOVE AT A TIME by Orrin C. Hudson
- CHESS FOR SUCCESS by Maurice Ashley
- HOW LIFE IMITATES CHESS by Garry Kasparov
- SCIENCE, MATH, CHECKMATE by Alexey W. Root
- WINNING CHESS Series by Yasser Seirawan
- TEACHING LIFE SKILLS THROUGH CHESS by Fernando Moreno
- SMART PLAY SMART TOYS: HOW TO RAISE A CHILD WITH A HIGH PQ by Stevanne Auerbach, PhD

# CHESS VIDEOS



- Searching For Bobby Fischer
- Knights of the South Bronx
- Fresh
- Chess Kids
- The Mighty Pawns



# Chess Resources



- *Progress With Chess*  
**[www.progresswithchess.org](http://www.progresswithchess.org)**
- *Chess in the Schools Program*  
**[chessintheschools.org](http://chessintheschools.org)**
- *AF4C (America's Foundation for Chess)*  
**[www.af4c.org](http://www.af4c.org)**
- *United States Chess Federation*  
**[main.uschess.org](http://main.uschess.org)**
- Community (i.e., Chess Clubs, Churches, Tournaments...)