

Teaching Chess in a Crowded Curriculum:

An investigation into the benefits of introducing a chess thinking skills program into schools to complement the move to a 21st Century Curriculum.



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By Nick Gibson (2003)

1. Introduction

As a full-time classroom teacher of grade 5/6 primary school students in Victoria I am faced every day with an enormous variety of challenges. I am fortunate to be a staff member at a school where teacher professional development is seen as a priority, and have been a keen participant in many sessions where the prime focus has been engaging students in the middle years of schooling.

Several years ago I happened by chance to rediscover a childhood interest in chess and began attending the Bendigo Chess Club. My passion re-ignited, I decided to introduce chess to my students, with a vague link proposed to problem solving and engaging students. (I would like to suggest a higher level of thought and preparation, but that wasn't the case at the time, more honestly it was a chance to pursue a personal interest at another level.)

What started at the time as the indulgence of a whim has had a remarkable impact on the students in my classes. As time passed and the changes in students were repeated with different groups, my interest in using chess as a teaching & learning tool increased.

After many years of teaching chess to my classes and accepting that the end result for my students justified the means, this essay examining the research into current thinking about the needs of middle years students, and how those needs can be met by a structured chess skills program, is the means by which I may be able to persuade others to reach the same end.

2. The Thinking Curriculum

Firstly, what are these changes that have led me to include chess as a key component of my teaching? My earliest recollection of my interest being piqued was during the very first year of introducing chess to my then grade 5 students. A student that arrived in my class midyear was underachieving academically, testing at grade 1/2 level in reading & not much higher in written maths tasks. His sense of self-esteem & his 'place' in the teaching & learning world was already well established ... not to put too fine a point on it, he saw himself as stupid.

Good at art, drawing, and manipulative tasks, something about chess 'clicked' with this student. His spatial awareness and ability to recognise patterns & familiar positions in a brief period was astonishing. In a short period of time he went from someone who had never seen the game to our school's first ever chess champion ... cleaning up the grade 6 'school brain' in the process. The key issue for me was the change in self-belief of this student over time. His increased application to tasks was clearly evident ... he began to believe that he was clever, and could perhaps be able to learn how to do tasks that he had previously thought were beyond him.

This pattern of underachieving students seeing themselves in a new light as a result of giving less chess able students an across the board 'belting' has repeated itself time and again.

Project Chess in Reno, Nevada, is funded in part by the Nevada Bureau of Alcohol & Drug Abuse, because they believe there is a clear link between learning chess and developing self-esteem & self-worth.

Irene Dixon Darnell, Project Chess developer, working with at risk students, notes that not only do students develop critical thinking skills; they also demonstrate changed attitudes, with students being calmer & more considerate as well. (Steele-Carlin, 2001)

Current Australian research suggests that ideally a curriculum that supports the development of thinking skills should:

- teach students about thinking and learning
- engage students in complex thinking to manage new situations and solve problems
- study topics in-depth
- have extended periods of time for sustained thinking
- relate thinking and learning strategies to subject knowledge
- embed thinking and learning strategies in every activity and
- be accessible to every student

(State of Victoria, DEET, Thinking Curriculum, 2002)

The importance of teaching the skills of thinking is highlighted by the current belief that specific content is less crucial than method.

The oft quoted view that today's students will be asked to perform workplace tasks that don't exist yet challenges schools to provide opportunities for students that promote flexibility, adaptability, creativity & critical thinking. Schools need to assist in the creation of students with a desire to be life long learners ... education should not be seen as a finite task, confined to classrooms.

In Australia the Middle Years Research and Development Project (MYRAD) that was conducted in 250 schools during 1999 - 2001 examined student perceptions of classes that focused on thinking & learning strategies. (State of Victoria, DEET, Research, 2002)

Students who believed their teachers were emphasising thinking and learning strategies were more highly motivated and more involved in productive cognitive strategies.

The more students feel they are given time to explore and understand new ideas, the more they...

- feel motivated to learn
- value really understanding their work
- feel they are in control of learning
- believe their school is showing them how to be better learners

MYRAD's recommendations included providing tasks that require complex thought and a greater focus on problem-based learning, open-ended questions and thinking and learning strategies. The provision of structured chess based activities could be tailor made to meet the stated critical need that middle-years students have to learn how to solve problems, manage time and think critically. (Cook, 2003)

Dr. John Munro (2003) suggests that a person's knowledge of a topic can be expressed as consisting of little 'idea beads' that are linked together. The links are learned through teaching or discovery.

Providing activities that encourage the development of both abstract and experiential 'bead links' may stimulate the formation of more elaborate networks and promote cross linking & creative, original thought. The best chess players learn not only strategies & tactics that take them beyond the initial 'wood shuffling' of the learner, but are able to make the leap to original solutions, creating something they may have not seen before, but 'instinctively' know to be sound.

Fletcher (2003) argues that chess should be taught with regard to the differences of individuals, not as if all students were a homogenous group with the same learning needs. Recognition of the different learning styles of students is widely accepted in other fields, and Fletcher suggests that the search in chess should not be for solutions, or victory, but rather for aesthetics, elegance & artistry.

The level of sophistication required to appreciate these higher level concepts is not always evident in a classroom ... even more reason to introduce them and awaken the students to different levels of appreciation of the world around them.

3. The New Basics

The Queensland New Basics Project attempts to address the provision of higher order thinking, intellectual quality & academic engagement. The emphasis at the Willows State School (2003) during the current three year trial is on developing deeper knowledge & understanding, with the underlying belief that there are strong links between the development of the New Basics & improvement in the 'Old Basics' of numeracy & literacy. Instead of the eight Key Learning Areas the school model has four curriculum organisers.

Key features in those four areas, which appear well suited to the presentation of a structured chess program, are:

- making creative judgements and engaging in performance
- collaborating with peers and others
- developing initiative & enterprise

Education Queensland's move to the New Basics is an attempt to address the problems of the so called "crowded curriculum", up the ante intellectually, provide for greater student engagement and prepare students for a future that will not be a duplication of what exists now.

(The State of Queensland (Department of Education) 2001-2003)

4. Research into Chess in Schools

Dyck (2003) was intrigued enough by the US Chess Federation's pledge "Chess Makes Kids Smart" to examine published material and read more widely about chess in schools. Dyck was impressed enough to suggest that chess may well be the key to strengthening the thinking skills of 21st century students. Measurable improvements in cognitive abilities, rational thinking and reasoning abilities were recorded for both gifted students & students identified as weaker academically.

Wallace (1996) notes that the barrier of teacher expertise is not a barrier at all. The most important attribute needed to involve the students is enthusiasm on the part of the instructor. Wallace also claims that the benefits of playing chess in class are so marked that chess can & should be an integral part of every school curriculum.

Chess is a game, like tee-ball or rounders, but there is one marked difference. Learning skills at any game can improve self-esteem and confidence, but chess is an all inclusive, non-gender specific game that also happens to be one of the most powerful educational tools available to strengthen the mind. (Dauvergne, 2000)

As in tee-ball coaching where the ability to perform a skill in isolation, such as batting, is not sufficient in itself, the ability to remember how the pieces move is only the beginning. My eight year old daughter has learned the basic moves of the chess pieces just by incidental exposure to a houseful of chessboards & half played games. But once the basic learning is over, the higher level thinking can begin.

Dauvergne claims improved skills of concentration, patience, perseverance, creativity, intuition, flexibility, analysis & deduction flow from regular chess playing.

Louise Gaudreau (cited in Dauvergne) noted significant increases in the average problem solving scores of students in New Brunswick, Canada when chess instruction was integrated into the traditional maths curriculum. The students scored far higher than students that were not having chess instruction. Primary school chess in New Brunswick has increased amazingly from just 120 registered school players in 1989, to 19,000 in 1992! Closer to home, the Bendigo region primary school zone final has grown from just 16 students in its first year to 132 last year, the largest single zone event in the state.

Robert Ferguson (cited in Kitsis, 2003) tested students in years 7 to 9 and found after 60 - 64 hours of playing and studying chess over a period of 32 weeks the students had improved their Thinking Appraisal test scores by 17.3%, compared with only 4.6% for students involved in other 'creative' activities, including writing, problem solving and independent study. His conclusion that chess improves critical thinking skills more than other methods of enrichment was supported by Dr. Stuart Margulies 1991 study (cited in Kaetch, 2003) which showed that students receiving chess instruction significantly outperformed control groups in a variety of tasks. The reading scores of the chess group improved more than a control group who were receiving additional instruction in ... reading.

A Venezuelan study of over 4,000 grade two students found significant gains in IQ scores after four and a half months of systematic chess study presented by teachers as part of the "Learning to Think Project". The gains were recorded across all socio-economic groups,

and applied equally to boys & girls. The Venezuelan government subsequently introduced chess lessons into the curriculum of schools. (Robert Ferguson cited in Dauvergne)

In a study in the 70's Johan Christiaen (cited in Kaech) noted significant gains in cognitive development in a chess playing group of grade five students, plus gains in their regular classroom testing. Chess playing was seen to have a positive effect on school achievement and motivation generally. In the 1990 New York City Schools Chess Program Report Christine Palm (cited in Kaech) asserts that the four year program had provided clear proof that:

- a) **Chess** instils in young players a sense of self-confidence and self-worth;
- b) **Chess** dramatically improves a child's ability to think rationally,
- c) **Chess** increases cognitive skills;
- d) **Chess** improves children's communication skills and aptitude in recognizing patterns;
- e) **Chess** results in higher grades, especially in English and Math studies,
- f) **Chess** builds a sense of team spirit while emphasizing the ability of the individual;
- g) **Chess** teaches the value of hard work, concentration and commitment;
- h) **Chess** makes a child realize that he or she is responsible for his or her own actions and must accept their consequences,
- i) **Chess** teaches children to try their best to win, while accepting defeat with grace;
- j) **Chess** provides an intellectual, comparative forum through which children can assert hostility i.e. "let off steam" in an acceptable way;
- k) **Chess** can become a child's most eagerly awaited school activity, dramatically improving attendance;
- l) **Chess** allows girls to compete with boys on a non-threatening, socially acceptable plane;
- m) **Chess** helps children make friends more easily because it provides an easy, safe forum for gathering and discussion,
- n) **Chess** allows students and teachers to view each other in a more sympathetic way,
- o) **Chess**, through competition, gives kids a palpable sign of their accomplishments, and finally;
- p) **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.

5. Conclusion

Palm (cited in Kitsis, 2003) provides reams of anecdotes from New York elementary school principals, each one suggesting that the introduction of chess into their school curriculum has had remarkable effects. Not only do they claim improved academic outcomes, but the improvement in self-esteem and social skills is seen by some as being even more critical to the long term success of the students.

This last point returns me to the personal example related at the start of the essay. For every year that the chess program has been part of my class there have been students who have made 'leaps of understanding' about themselves & their place in the world.

In term 3 2003 I quietly rejoice at the sight of two grade five students, one boy & one girl, who choose each recess and lunchtime to play a blitz game of chess. Why is this noteworthy? In term 1 they had shown an appalling lack of respect and tolerance toward each other, their mutual sense of loathing was breathtaking.

Are they the best of friends? By no means. Has a shared interest in chess made a measurable difference to their ability to function in a social setting? Unquestionably.

The opportunity to play chess provides students with an endless supply of original problems but always with the security of a familiar scaffold ... they have the comfort of knowing what they are doing, but the challenge of not knowing what is going to happen next. The skills required to critically analyse positions and recall patterns, while all the time looking for that creative brilliancy translate directly to the information overload students are confronted with in their technology rich lives. Is this information relevant, have I seen this before, how does it compare and what do I think?

An activity that nurtures the development of these critical thinking skills, while being cunningly disguised as a game, is a precious gift in the classroom. What would teachers be prepared to pay if you promised to provide an activity that would engage every student in their class, every time?

Our school's initial outlay of \$200 for chess materials, quietly purloined from the maths budget, bought 5 complete sets, boards & a chess clock, and several years later they are still in daily use.

We now have 12 sets and have a small but precious chess library, where the books are always on loan and reserved. Silent reading can occasionally turn into a group debate when the chess problem of the week is posted in the book, and the most scrutinised and analysed piece of a4 paper in the school is the chess club pairings and ratings sheet, when it is posted on the board each week.

The regular use of chess clocks (courtesy of the local chess club) and the playing of tournaments using a variety of time controls adds an additional element of time pressure to the students decision making process. Practice at making choices, selecting the best option from a bewildering (to an outsider) range of possibilities, decisions made while being conscious of the time available, may prove effective when students are faced with academic exam pressures.

To see the finish of a blitz game when the time pressure is really on you can't help but be amazed at the capacity of the mind to make decisions, (and often good ones) apparently instantly.

This amazing mind training, that truly leaves your pulse racing, provides a sense of mental exhilaration that once experienced is never forgotten.

In June 1999, the International Olympic Committee officially recognised chess as a sport. In this sport obsessed nation, perhaps the fact that this is now being acknowledged may be the signal that will galvanise more schools into action.

Be warned, once a chess program is started in schools there is no going back. You may even find that wet day timetables are quieter than the days when the students are asked to go outside.

Now, if someone can just tell me how, at the age of forty three, I can improve my chess so that after six months of instruction my top players aren't queuing up to wipe me out I'll be pleased to hear it.

6. Government Recognition

Australian Government Recognition

HOUSE OF REPRESENTATIVES

Notice of Motion, Mrs Margaret May:

“I give notice that on the next day of sitting I shall move;

That this House:

- recognises the important significance of the opening of the first purpose built, state of the art, chess centre in Australia;
- recognises that the game of chess is one of the most powerful educational tools available to develop and strengthen a child's brain and cognitive capacity;
- recognises that Australian schools are embracing chess as a sport that complements a student's education;
- recognises the tourism potential and export industry benefits that hosting a chess Olympiad would bring to Australia;
- and calls on the Australian Sports Commission to recognise chess as a sport in line with the International Olympic Committee's recognition of chess as a sport in 1999.”

(Broekhuysen, Paul. 2003)

American Government Recognition

Funding for chess activity is available under the “Educate America Act” (Goals 2000), Public Law 103-227, Section 308.b.2.E.:

“Supporting innovative and proven methods of enhancing a teacher's ability to identify student learning needs and motivating students to develop higher order thinking skills, discipline, and creative resolution methods.”

The original wording of this section included “such as chess” and passed both houses of Congress that way. But the phrase was deleted later in Conference Committee.

General Assembly
Proposed Bill No. 178
January Session, 2003
LCO No. 728

Referred to Committee on Education

Introduced by: SEN. SMITH, 14th Dist.

AN ACT CONCERNING CHESS AS PART OF THE SCHOOL CURRICULUM.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

That title 10 of the general statutes be amended to provide that chess be an elective course for elementary and high school students.

Statement of Purpose:

To include chess as part of elementary and secondary curriculum to increase strategic thinking skills, stimulate intellectual creativity and improve problem solving ability while raising self-esteem.

Chess, a very effective classroom tool, should be offered and encouraged in the education system to students of all ages in order to enhance their reasoning and critical thinking skills. It is particularly important to heighten awareness at the National, State, and local levels, as to the benefits that Chess can contribute in preparing students for higher education and responsible decision-making from adolescence through adulthood.

Chess is not just a game, but a brilliant academic achievement aid, cognitive and metacognitive developer, discipline builder, analysis and problem-solving enricher.

Former U.S. Secretary of Education Terrell Bell encourages knowledge of chess as a way to develop a preschooler's intellect and academic readiness.

The State of New Jersey passed a bill legitimising chess as a unit of instruction within the elementary school curriculum. A quote from the bill states:

“In countries where chess is offered widely in schools, students exhibit excellence in the ability to recognize complex patterns and consequently excel in math and science...”

On the state level, Chess has been included in one (1) legislative bill in the State of New Jersey. The legislation was passed and signed into law on December, 1992.

(New Jersey Bill #S452, 1992)

BILL #S452 --CHESS IN THE SCHOOLS

This act concerning instruction in chess supplemented Chapter 35 of Title 18A of the New Jersey Statutes:

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The Legislature finds and declares that:

- a. chess increases strategic thinking skills, stimulates intellectual creativity, and improved problem-solving ability while raising self-esteem;
- b. when youngsters play chess they must call upon higher-order thinking skills, analyse actions and consequences, and visualize future possibilities;
- c. in countries where chess is offered widely in schools, students exhibit excellence in the ability to recognize complex patterns and consequently excel in math and science; and
- d. instruction in chess during the second grade will enable pupils to learn skills which will serve them throughout their lives.

2. Each board of education may offer instruction in chess during the second grade for pupils in gifted and talented and special education programs. The Department of Education may establish guidelines to be used by boards of education which offer chess instruction in those programs.

3. This act shall take effect immediately.

This act was signed by the Governor after a 23-1 vote for the act by the senators.

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