Promoting Metacognition through Chess

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Metacognition: “Thinking about thinking”; Overlap of Cognitive and Metacognitive; Metacognitive knowledge “actively used in a strategic manner to ensure that a goal is met” (Livingston, 1997).

I. Chess - Preparation for Critical Thinking
   • Intellectual Perseverance
   • Confidence in Reasoning
   • Developing Perspective
   • Developing Criteria for Analysis
   • Generating and Assessing Solutions
   • Distinguishing Relevant from Irrelevant Facts

II. Metacognitive Activities – Deliberate Connections
   • Role-play by Teacher – Model the Problem-Solving Process
   • Review Required Knowledge – Rules, Strategies, Steps to Solve (Active/Passive Review)
   • Pair and Share – Collaborative Conversations (Solutions, How Others Solve the Same Problem)
   • Mind-Mapping – Arranging and Connecting Concepts (Organizing Analysis)
   • Game Analysis - Written and Verbal (Prior Knowledge, Processes, Alternatives, Perspective of Opponent)

III. Applications – Teachers and Coaches
   • Problem Solving
   • Tactics Puzzles
   • Connecting Chess to the Curriculum
   • Large/Small Group Collaborative Conversations
   • Education Conferences and Teacher Training

Resources on Metacognition:
http://gse.buffalo.edu/fas/shuell/CEP564/Metacog.htm
http://www.coedu.usf.edu/main/departments/sped/mathvids/resources/metacognitive.html#tips
https://cft.vanderbilt.edu/guides-sub-pages/metacognition/
Connecting Chess, Literacy, and Metacognition

Below: What is the best move for White?

Standard 1: Reading Closely
- “What material is on the board?”
- Which player has the most material?
- “What pieces/pawns are under attack?”
- “How is the position of each King a factor in solving this problem?”
- “How would you Mind-Map this problem-solving strategy?”

Standard 4: Word Meanings
- Material
- Imbalance
- Rank, File, Diagonal
- Checkmate, Mate
- Piece Value
- Sacrifice

Standard 6: Point of View
- “Describe how you would analyze this position if you were playing the Black pieces and it was Black’s move.”
- “What does analyzing the problem from Black’s perspective tell you about what the player of the White pieces should do?”
- “How do you apply this problem-solving strategy to your other classes?”

Standard 7: Content in Diverse Media
- “What are the key squares in this position?”
- “Why is the material imbalance important for White?”
- “What do you look for when you analyze a chess position?”
- “What strategies could you use to solve this position?”

Standard 8: Reasons and Evidence
- “What is White’s best move?”
- “Can you show how Black will respond to this move?”
- “What alternatives for White did you consider? How did you eliminate them?”
- “How did you evaluate the solutions offered by other students?”
- “How would you explain your decision-making process to a person who does not play chess?”

Standard 10: Text Complexity
- “How would this problem change if the Black Queen were on the square a6 instead of on h6?”
- “How would this problem change if another Black Rook were added on the square a6?”
- “What would you do to answer these questions?”
- “How could you use your chess problem-solving skills to solve problems in other subject areas?”