ICARUS

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# TRAINING MODULE

Partner: UniChess S.S.D.R.L.

Module's title: **Teaching Chess to Adults**

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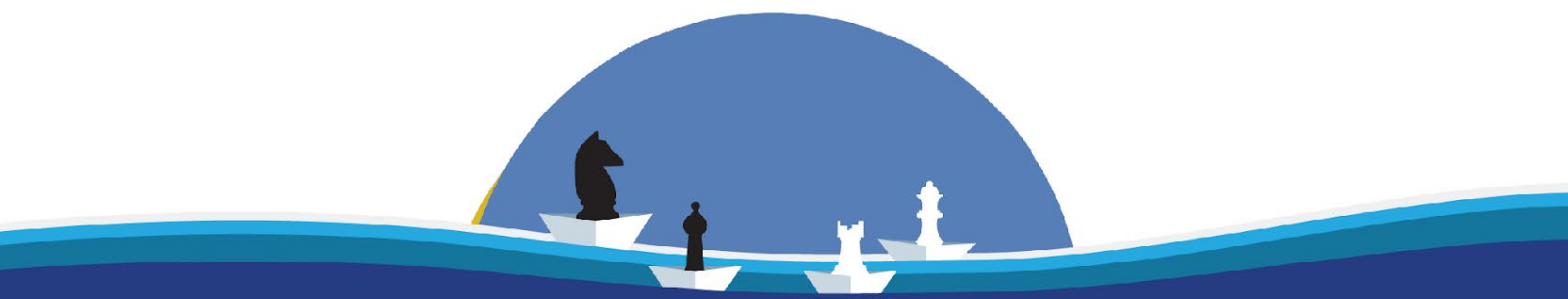

Including Chess As a Re-education Up-Skilling tool

# Summary

## Summary

# 1 BACKGROUND

## 1.1 Andragogical principles of adult learning

Covert emphasizes the significance of applying the six foundational principles of andragogy for the benefit of adult learners. At the core of these principles is the recognition that adults generally lean towards self-directed learning and are driven by internal motivations.

According to Knowles, adult learners leverage their life experiences in the learning process and place considerable importance on achieving long-term goals. This distinctive approach sets adult education apart from traditional teaching methods, providing a unique and effective framework for the educational advancement of adult learners.

Covert further emphasizes that a profound understanding of adult learning theory is not only advantageous for adult learners but is also crucial for educators and supervisors responsible for adult education. By integrating these principles into their teaching methods, educators can significantly enhance their effectiveness.

The six andragogical principles of adult learning, as outlined by Covert, are as follows:

1. **Need to know**: Adults are motivated to learn when they understand the underlying reasons for acquiring new knowledge. Emphasizing relevance and utility, adult learners engage more deeply, highlighting the importance of context and applicability in adult education.

2. **Self-directed learning**: Adult learners prefer autonomy in their learning process. This includes setting their own objectives, choosing learning methods and resources, and conducting self-assessments of their progress.

3. **Drawing from lived experiences**: Adults incorporate their personal and professional experiences into their learning, enriching the educational experience.

This integration helps them connect new knowledge with existing frameworks, fostering deeper understanding and retention.

4. **Readiness to learn**: Adult learners are more inclined to engage in learning activities when they perceive a direct relevance to their lives. Real-world tasks or challenges often trigger this readiness, making situational learning particularly effective.

5. **Life-centred orientation to learning**: Adult learning focuses on practical problem-solving and goal achievement. Adult learners prefer learning situations closely aligned with their life experiences, providing immediate applicability to their lives.

6. **Intrinsic motivation**: The primary driving force behind adult learning is internal motivation. Adult learners are predominantly motivated by desires for personal development, career progression, enhanced job performance, and other self-determined incentives, rather than external compulsion or rewards.

## 1.2 Why is adult learning theory important?

Covert highlights the significance of adult learning theory, emphasizing its crucial role in both educational and professional development settings. This theory is instrumental because it focuses on understanding and accommodating the distinctive learning needs of adults, making it an indispensable resource for educators and academic institutions.

Several pivotal factors underscore the importance of adult learning theory:

1. **Recognizes Unique Learning Preferences**: Adult learners possess distinct learning styles compared to children. Their wealth of life experiences and existing knowledge shapes their approach to acquiring new information. Acknowledging these unique styles is vital for creating effective learning environments tailored to adults.

2. **Enhances Engagement and Retention**: Adult learning theory places a strong emphasis on the relevance and practical application of knowledge. Adults are more motivated to learn when they perceive direct benefits to their personal or

professional life. By emphasizing relevance, adult education becomes more engaging and effective, leading to improved retention and application of knowledge.

3. **Aligns with Adult Motivations and Goals**: Adult learners often pursue specific goals such as career advancement, personal growth, or skill improvement. Adult learning theory recognizes these motivations and aligns learning objectives accordingly. This alignment ensures that learning is not only pertinent but also directly contributes to achieving the learners' goals.

4. **Adapts to Changing Workplace and Societal Needs**: In today's rapidly evolving world, continuous learning is imperative. Adult learning theory plays a crucial role in helping adults adapt to new technologies, methodologies, and societal changes. This adaptability ensures that adults remain competent and competitive in their respective fields.

## 1.3 Challenges of adult learning

Adults encounter various challenges when undertaking learning endeavors, whether in educational institutions or workplaces. Consequently, learning as an adult demands distinct strategies and support compared to our earlier years. Some prevalent challenges include:

1. **Time Constraints**: Juggling work and family responsibilities can pose a significant challenge for adults trying to allocate time for studying and attending classes. However, options such as online courses, self-paced learning, and schedules tailored for working adults can facilitate a more manageable balance.

2. **Confidence Issues**: Navigating a learning environment alongside a younger workforce or student peers may be intimidating for even the most experienced professionals. Adults might sense a disconnection from younger students due to differing values and life stages. Nonetheless, it's crucial for adult learners to recognize the value of their life experiences and appreciate the diverse perspectives that students of all ages bring to the learning environment.

3. **Financial Considerations**: Returning to college entails a financial commitment, which can be overwhelming, especially when adults are already budgeting for significant expenses. Learning effective financial planning for education can empower adults to address these challenges and make informed decisions.

4. **Self-Doubt**: Adults who have been out of school for an extended period may harbor doubts about their adaptability and ability to acquire new skills. However, engaging in lifelong learning proves vital for career success in a rapidly evolving job market and contributes to maintaining mental agility as individuals age.

Synoptic framework between a traditional lesson and an adult chess lesson:

| | **Traditional Lecture** | **Chess Lesson for Adults** |
|---|---|---|
| **Objective** | Transmitting knowledge on a specific topic. | Improve cognitive skills through the game of chess. |
| **Teaching method** | Lectures, group discussions, assigned readings. | Interactive lessons, chess games, post-game analysis. |
| **Evaluation** | Tests, exams, projects. | Progress in the game, understanding of strategies and tactics. |
| **Interaction** | Limited interaction during lectures. | High interaction during chess games. |
| **Practical application** | Depends on the topic. | Direct application through the game of chess. |

# 1.

# 2 MAIN SUBJECT

## 2.1 Chess Assets

Based on pertinent research conducted since the start of the last century, these assets can be categorized into two primary groups: innate and attainable.

| Innate Chess Assets | Attainable Chess Assets |
|---|---|
| 1) Self-control. | 1) Good health condition. |
| 2) Ability to think on subjects. | 2) Strong nerves. |
| 3) Intense mental activity. | 3) Perception of data conveyed by our senses. |
| 4) Obedience of will. | 4) Objective thought-process. |
| 5) Proper distribution of attention. | 5) Powerful memory. |
| 6) Perception of position dynamics. | 6) High mental level. |
| 7) Combinative creative skill. | 7) Self-confidence. |
| | 8) Control of emotional urges. |
| | 9) Feeling for the position (combination of thought and emotions). |

Enhancing and developing innate assets is achievable, whereas attainable ones primarily rely on education. Persistent effort and systematic training are crucial for advancing personal traits and the so-called 'required assets,' essential for overall chess improvement and the pursuit of the grandmaster title. Undoubtedly, guidance from a specialized trainer or advisor is vital, as without it, the trainee may struggle to comprehend and enhance these chess-specific assets. It's noteworthy that these attributes are exclusive to chess and don't directly impact other interests. For instance, a 'powerful special memory' pertains specifically to chess-related data, highlighting the uniqueness of each individual.

## 2.2 Health & Sports

Chess players often neglect their health, putting themselves at significant risk of heart problems due to a lack of physical training and the daily stress associated with competition preparation. Therefore, engaging in regular workouts or sports activities

is crucial, not only for safeguarding our well-being but also for achieving better and sustained results.

The primal activity of walking, requiring no specialized equipment and adaptable to any location, offers numerous benefits. It stands as one of the simplest forms of aerobic training, enhancing cardiovascular and respiratory functions, as well as overall physical fitness. A routine comprising just thirty minutes of walking and two hours at the gym can effectively rewind our biological clock by 6-8 years, aiding in weight management and preventing obesity. Moreover, it contributes to reducing the levels of harmful cholesterol (LDL) in our body. Studies from American universities affirm that this activity enhances memory and mental focus, while the production of endorphins, which alleviate physical and emotional pain and induce euphoria, reaches remarkably high levels.

## 2.3 Training Time-Frame

Another aspect requiring consideration is the 'time-frame' of training in correlation with our cognitive activities and how we can achieve optimal performance within it.

Scientific consensus broadly recognizes three categories of individuals:
1) **Larks**: Their mental processes peak during the first half of the day and decline in the second half. Approximately 25% of the global population falls into this category.
2) **Owls**: Their mental processes reach maximum efficiency during the latter part of the day, especially in the evening. They typically go to bed late and wake up accordingly. About 30% of the world's population belongs to this group.
3) **Arrhythmic**: For these individuals, mental processes exhibit no specific highs or lows during the day or night. The largest portion of the world's population, approximately 45%, falls into this category.

Remarkably, all elite chess players belong to the 'Owls' category in practice. The rationale is straightforward and directly linked to the standard time-frame of chess competitions, which predominantly occur in the second half of the day. Consequently, chess players 'must' align themselves with this category as much as possible and adjust their training schedules accordingly.

However, if adapting to this 'new' time-frame proves challenging, there are solutions. For chess players primarily inclined towards being larks, a commonly employed strategy involves taking a nap between lunch and play, typically lasting 1 to 1½ hours. This refreshes the mind, preparing it for the challenges ahead.

# 3 TARGET

## 3.1 Adult Learners

As documented in Beinart's and Smith's survey (1997-1998), individuals enrol in courses for five primary reasons:

- **Skill enhancement**: Individuals aim to improve their knowledge or skills related to voluntary work or hobbies.
- **Basic skill improvement**: People pursue education to enhance fundamental skills or knowledge, often with the intention of engaging in voluntary work or hobbies.
- **Career development**: Participants seek learning opportunities with the future job market in mind.
- **Personal enrichment**: Some individuals enrol simply for the excitement of learning and acquiring new knowledge and skills.
- **Work-related**: Nearly 50% of participants indicated that learning was mandated by their employer, sometimes facilitated and typically funded by the employer.

Notably, the research highlights that a significant motivation for enrolling in educational programs is the opportunity to meet other people. This underscores the vital social function of adult education, particularly in the contemporary context where distance or e-learning is gaining popularity and becoming an integral part of everyday life. Similar surveys on adult learning also emphasize the social aspect of education.

# 3.2 The Theoretical Alphabet in Chess (Chess used in andragogy as a metaphor)

**Pawn - Object of andragogy**

They represent the objects, that is, the formative processes related to the different subjects of training. Learning and training are proposed as processes of behaviour modification, of restructuring one's cognitive maps, and this process of change goes through all stages of life.

**Bishop - Language of andragogy**

They represent the plurality of languages with which andragogy reads and interprets the complexity of educational facts.

**Rock - Hermeneutic logic**

They represent the expression of andragogy's point of view. Access to reality is never objective, but feeds on interpretations.

**Knight - Investigative device**

They represent the investigative model, i.e., the method of "research": research that enjoys maximum exploratory freedom. The complexity of the object requires many research methods.

**Queen - Heuristic principle**

Represents the ability to hypothesize novel and unexpected solutions related to the theory-practice dialectical equation.

**King - Legitimation paradigm**

It represents the stakes of the game, and shows itself as a place of synthesis. Indeed, andragogy legitimizes itself as complex and plural, antinomian and dialectical, generative and transformative knowledge, aimed at identifying paths and strategies of the transformation and evolution of the existential, cultural, and value identity of men and women in a given historical and geographical context.

# 4 DESCRIPTION

After conducting his research ("Thought and Choice in Chess."), Adrianus Dingeman (Adriaan) de Groot concurred with Binet that visual memory and perception play crucial roles in chess, emphasizing the significance of problem-solving abilities. Highlighting the role of chess memory, de Groot concluded that there are no "new" moves in the game; players with more substantial personal experience and knowledge find correct moves more easily. This concept is now reflected in contemporary chess literature and theory as "chess intuition" and "chess pattern recognition."

Discussing the absence of "new" moves in chess, it's noteworthy that American mathematician Claude Shannon calculated the Shannon Number ($10^{120}$) based on the game of chess. This estimate represents the number of different possible chess games. Shannon's calculation is based on an average of about $10^3$ possibilities for a pair of moves, with a typical game lasting about 40 such pairs. To grasp the enormity of $10^{120}$, consider that there are more possible 40-move chess games than the number of atoms in the observable universe ($10^{80}$). In fact, the Shannon Number is more than a billion billion billion billion times larger! Clearly, the Shannon Number surpasses the comprehensibility of the human brain. Shannon's contributions have paved the way for computational approaches to chess, addressing the question of whether chess is solvable.

In his examination of chess players, de Groot conducted studies involving participants spanning all levels of chess expertise, ranging from amateurs to World Champions. The primary objective of the research was to unravel the cognitive processes and mental demands entailed in deciding how to execute a move in chess-specifically, determining the piece to move and its destination. Participants were presented with chess positions or problems, placed under supervision, and tasked with identifying the correct solution while vocalizing their thought processes for recording.

De Groot's findings revealed a crucial aspect of move selection in chess occurring within the first few seconds after players encounter a position. He delineated the process of move selection into four stages:

1. **Orientation Phase (First Stage)**: In this initial stage, the participant perceives the position on the board, assesses it, and formulates a general strategy for the next move.

2. **Exploration Phase (Second Stage)**: Also referred to as "branch theory" in chess, this stage involves identifying candidate moves or potential options.

3. **Investigation Phase (Third Stage)**: In this stage, chess players deliberate and select a potentially optimal move, engaging in activities such as calculating lines, mentally evaluating final positions, and abstract thinking.

4. **Proof Phase (Fourth Stage)**: The final stage involves the player drawing conclusions and affirming that their evaluation, calculation, and choice constitute the best course of action.

Since our focus is on Adult Learners who have, probably, no prior exposure to the game of chess, we won't be delving into the initial phase that directly connects chess with thought processes or decision-making.

# 5 AIM/GOAL

That playing chess is good for the brain and memory is proven, but it is also true that the magic only happens if you play continuously.

## 5.1 Chess hones verbal skills

From 1973 to 1974, Albert Frank, a school director based in Zaire, studied the effects of chess on children who took classes for two hours every week. His study, which is published in the book Chess and Aptitudes, showed more than stellar results. After the chess lessons, he concluded that those who practiced chess demonstrated improved verbal skills, as well as enhanced mathematical skills and administrative-directional tasks. So how does chess enhance verbal skills, despite the absence of words or verbal communication in the game? Frank believes that chess improves verbal skills since it utilizes all the abilities of an individual, as many aptitudes or faculties of the mind are utilized whenever the game is played.

## 5.2 Chess sharpens critical thinking skills.

In his 1995 study titled Chess in Education: Research Summary, Dr. Robert Ferguson (a cardiologist at the Northeast Georgia Diagnostics Clinic) had established that chess is instrumental in the enhancement of a child's critical thinking and good judgment skills. Ferguson's subjects, who were seventh to ninth graders, yielded a 17% improvement in the results.

## 5.3 Chess boosts emotional intelligence and psycho-social skills

Intelligence is not merely measured by IQ points; emotional intelligence plays a big role as well. Also known as EI, it is defined as the person's ability to perceive, control, and evaluate emotions. The game helps bring more and more people together regardless of race and socioeconomic status, according to Dr. Rose Marie Stutts of the Freedom Chess Academy. In effect, chess improves emotional intelligence, as well as psycho-social skills.

## 5.4 Chess preserves mental acuity in the elderly

While chess has already been proven to be highly beneficial for kids, studies have shown that it can help improve the mental acuity of the elderly as well. Chess hones an elderly player's ability to determine cause and effect patterns, analyse the relationship between two ideologies, and understand key concepts. As such, chess has proven to be highly effective in protecting the elderly from neuro-degenerative conditions like dementia and Alzheimer's disease.

## 5.5 Chess in prison

The purpose of incorporating chess into prison projects can vary, but common objectives include promoting rehabilitation by developing cognitive skills, problem-solving abilities, and strategic thinking. Chess serves as a means to enhance critical thinking, concentration, decision-making, and planning, contributing to personal growth and preparation for reintegration into society.

In addition to skill development, chess is employed to encourage positive behavioural changes, fostering discipline, patience, and respect among inmates. It provides a constructive outlet for stress relief, allowing inmates to channel their energy in a positive and focused manner. Chess programs also aim to build a sense of community through tournaments, group play, and chess clubs, promoting camaraderie and teamwork.

Within the prison system, chess may be integrated into educational initiatives, offering opportunities for learning and personal development. By fostering cognitive skills, positive behaviour, and a sense of community, chess programs seek to contribute to a reduction in the likelihood of reoffending (recidivism) among inmates. Overall, the goal is to utilize chess as a tool for positive change and rehabilitation within the prison environment.

# 6 LEARNING OUTCOME

***In a prison context:***

The anticipated outcome is that incarcerated individuals will become more familiar with the game of chess, establishing it as a constructive and engaging pastime for mental exercise. When chess is pursued as a hobby rather than a competitive sport, it becomes a more enjoyable and recreational activity. As participants engage with chess clubs within the prison environment, they will step out of their comfort zones, forge new connections, and actively socialize, fostering a healthier use of leisure time compared to passive activities like watching television. Additionally, as they cultivate a genuine interest and passion for the game, they can harness chess as a means of recreation, relaxation, facing challenges, and exercising their minds.

Primary skills targeted for development among incarcerated individuals include visualization, memory, self-confidence, self-analysis, pattern recognition, time management, and communication. These skills aim to empower participants not only in their engagement with chess but also in enhancing various cognitive and interpersonal abilities that can positively influence their overall well-being.

***In a general context:***

The intended learning outcome is for adult learners to deepen their understanding of chess and establish it as a fulfilling hobby that serves as a regular mental exercise. When approached as a recreational pursuit rather than a competitive sport, chess becomes a source of enjoyment. As learners participate in chess clubs, they are encouraged to step beyond their comfort zones, connect with new peers, and engage in live social interactions, offering a healthier alternative to passive activities like watching TV.

Moreover, as participants develop a genuine fondness for the game, they gain the ability to utilize chess for recreation, relaxation, overcoming challenges, and exercising their minds. The primary skills targeted for enhancement encompass visualization, memory, self-confidence, self-analysis, pattern recognition, time management, and communication. These skills are intended not only to enrich the participants' experience with chess but also to contribute positively to various cognitive and interpersonal aspects of their lives.

## 6.1 Typical mistakes

Let's address some of the most common mistakes observed in chess training:

1) A prevalent error is conducting a training process without a well-established plan. Many trainers struggle with executing individual training due to a lack of proper education and the absence of training plans and manuals. The absence of educational year plans suggests a lack of a structured schedule, which should ideally include opening tests (as a warm-up), homework review, a main subject session, tests to evaluate understanding, and assigning homework. Homework plays a crucial role in thorough subject comprehension and serves as the foundation for knowledge improvement.

2) Opening study is often mishandled, with some trainers merely referring to the Encyclopedia of Chess Openings (ECO), dictating lines, and expecting students to

memorize moves without thorough explanations. Trainers sometimes forget that the primary goal of opening strategy is rapid development, securing the king's position

through castling, and engaging in the fight for the centre. Another common mistake is teaching trappy schemes without considering the individual player's style. Some trainers limit themselves to a few openings and teach every student in the same manner.

A notable error is pushing students towards specific openings without considering their playing style. For instance, teaching all students to play the 'French Defence' in a certain country is a serious mistake, as open positions are typically recommended for beginners. The choice of openings should align with the student's playing style and understanding of chess, as highlighted by Grandmaster Yuri Averbakh. Unsuitable openings for beginners include the 'French,' 'Caro-Kann,' 'English,' 'Accelerated Dragon,' and 'Fianchetto' systems for White.

A personal experience preparing a junior player for the Junior World Championship emphasized the importance of choosing openings wisely. The student played the 'Accelerated Dragon,' and in addressing potential weaknesses, it became apparent that a more suitable opening choice should have been recommended based on the player's style and understanding of chess.

The optimal strategy for Black in this position involves playing on the dark squares. However, explaining this concept to a ten-year-old girl would require exceptional pedagogical skills, even surpassing those of Pestalozzi. It should be prohibited to engage in opening schemes lacking a foothold in the centre or lines with prolonged forced variations, as this hinders the understanding of the centre's significance in chess.

3) Trainers frequently overlook the analysis of their students' games, akin to tennis coaches who focus on teaching hand positioning. Just as in chess, the correction of mistakes can only be achieved through thorough analysis.

4) As a chess player progresses, there comes a point when they are tasked with analysing their own games. Anatoly Bykhovsky, a notable Soviet junior trainer who collaborated with Karpov, Kramnik, and Kasparov, guided a 12-year-old Sasha Grishchuk in mastering this skill. Initially, Sasha presented a one-page analysis, but

over six months, it evolved to 2-3 pages. Eventually, he embraced the concept, and some of his analyses extended to an impressive 15 pages.

5) Therefore, when a student conducts a self-analysis of their games, the goal extends beyond understanding the position; it involves identifying new possibilities overlooked during the game and eliminating common mistakes. To maintain a record of errors, students are advised to use diagrams. These mistake diagrams should be documented in a notebook or recorded digitally, including the type of mistake and the correct solution.
Once around 50-60 diagrams accumulate in the notebook, the system starts yielding benefits. The student can recognize their mistakes, enabling corrections, resulting in significantly improved tournament performance. By reviewing just 2-3 diagrams, a student can 'vaccinate' themselves against potential mistakes before a tournament.

6) An essential aspect of game analysis is considering the moves made by the opponent and giving them special attention, a step often overlooked by young players. This practice fosters objective thinking, allowing the young player to discern practical moments, thereby enhancing their planning and technical skills. The instructional methodologies of both the Botvinnik and Kart schools were grounded in the analysis of pupils' games, drawing concrete conclusions.
Crucially, players are encouraged to articulate their mistakes verbally. The renowned Soviet trainer Alexander Kotov emphasized that a pupil should be capable of explaining their actions and the idea behind each move at any given moment. This verbal expression is fundamental for maintaining control over the situation on the chessboard.

7) The organization of the study of chess classics is notably lacking. Even the programs designed by Golenishchev and the Dutch Cor van Wijgerdens fail to address this inadequacy. The games of Rubinstein, Capablanca, Alekhine, and Botvinnik offer exceptional educational content that students can derive substantial benefits from.

8) The endgame is frequently approached without a systematic method, and it lacks a proper examination of the fundamentals. Although numerous excellent books on the endgame are accessible in various languages, trainers often fall short in teaching essential theoretical positions or methods of play. They overlook instructing how to transition practical positions into theoretical ones.

There seems to be an impression that some trainers find teaching and studying the endgame somewhat tedious, leading them to skip this crucial aspect of chess education.

9) Errors in psychology and communication with students can be categorized as 'sins,' and the primary cause is often traced back to a deficiency in pedagogical education. To address this, the implementation of refresher courses is necessary, fostering continual self-education among trainers.
When coaching players during tournaments, adopting the correct psychological approach becomes paramount. Success hinges on understanding the individual psychology of the pupils and drawing from the wealth of experience that trainers bring to the table. Additionally, physical preparation plays a vital role. The stress of daily 4-5 hour games, coupled with extensive preparation, necessitates mental stability, a quality inherently linked to physical stability achieved through regular sports exercises.

10) Cultivating an individual approach to each student is crucial. Unfortunately, a significant 90% of trainers seem unwilling to heed the words of the eminent trainer Victor Kart, who emphasized the importance of providing every student with a personalized approach. This lack of commitment is evident in various aspects, such as the selection of opening repertoires, the study of chess classics, and the analysis of students' games. The reluctance stems from the considerable effort required to invest such personalized attention in each student. Exceptions may occur when a student hails from an extremely affluent family, but such fortunate circumstances typically favour less competent trainers rather than the more skilled ones.

11) The exploration of the middlegame is the focus here. While the approach to learning tactics is reasonably adequate, the teaching of variation calculation lacks

a systematic structure, devoid of a proper theoretical foundation and evaluation tests. Not every trainer possesses the capability to instruct on positional or strategic play.

12) Utilizing computer facilities in both the training process and by individual students holds significance. However, I believe there is a lack of effective computer programs to assist trainers, and the existing programs are often developed by non-professionals.
It is essential to exercise caution with students using computer programs, ensuring they do not engage thoughtlessly in blitz or bullet games on various platforms. Only when an individual reaches the level of a candidate master should they be permitted to use Chessbase for preparing against competitors. However, the use of analysis engines like Fritz and similar programs must be carefully regulated.
Excessive reliance on engines may lead to a weakening of 'short calculation,' a skill crucial for formulating and verifying plans. Notably, Arshak Petrosian, upon commencing work with Peter Leko, prioritized turning off Fritz as the first step.
The overarching principle among leading trainers is to "work using your head, attempting to push yourself closer to the limits of the game." While a trainer's job may be modestly compensated, involve challenging journeys, and receive occasional gratitude from students, there is no greater satisfaction than witnessing the victories and creative and athletic growth of one's students.

13) Trainers and chess players with a limited perspective often undervalue the significance of delving into chess history. It holds tremendous importance, not only for comprehending the evolution of chess but also for grasping the pivotal role played by chess champions.
Surprisingly, many emerging top players lack familiarity with the list of World Champions and their chronological order. To illustrate this, when tasked with compiling a list of all world champions, one young chess player responded with the name 'Catablanca.'

Individuals who neglect to explore chess history and analyse classic games may encounter challenges in elevating their chess proficiency.

# 7 TRAINING APPROACH

Chess has served as a versatile tool across various domains, including mathematics, psychology, medical research on brain functionality, Artificial Intelligence projects, programming, retro analysis, and more. Contrary to the belief that only individuals with high IQs can excel at chess, this assumption is rooted in historical periods when only the best players received attention, giving the impression that all chess enthusiasts are skilled players. The game's inherent structure, with alternating shades rather than traditional colours, makes it an ideal instrument for human development. Grandmaster Kotov introduced "Chess Botany" to elucidate the cognitive processes of chess players, detailing how they think, calculate moves, identify candidate moves, and make decisions. The provided diagrams from Kotov's book illustrate the systematic, logical, visual, and analytical aspects of chess player thinking.

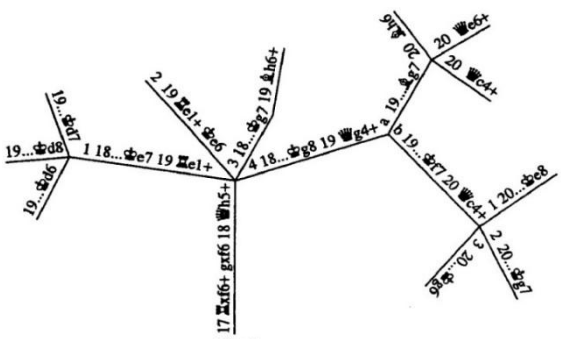

Fig.1

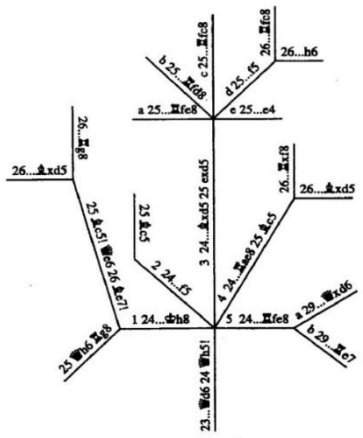

Fig. 2

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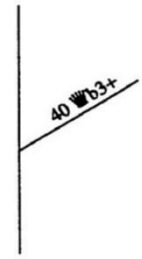


Fig. 3

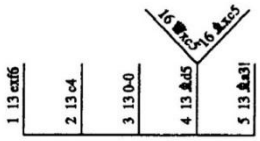


Fig. 4

This approach aims to elevate brain activity and contribute to develop critical thinking and problem-solving skills.

# 8 SCHEDULE

**1. Introduction to Chess (15-30 minutes)**

- ***History of Chess***: Discussion of the history and evolution of chess, from its beginnings in India to the modern game.
- ***Basic Rules of the Game***: Explanation of the basic rules of chess, including the purpose of the game, how the pieces move and how to win a game.
- ***Purpose of the game***: Discussion of the purpose of chess, which is to put the opponent's king in checkmate.

**2. Basic Elements (30-60 minutes)**

- ***Chessboard and pieces***: Description of the chessboard and pieces, including their initial positions.
- ***Piece movements***: Explanation of how the various pieces (king, queen, rook, bishop, knight, pawn) move.
- ***Special rules***: Discussion of special rules such as castling, taking *en-passant* and promotion of the pawn.

**3. Strategies and Tactics (60-90 minutes)**

- ***Common openings and their objectives***: Discussion of common openings and the strategies behind them.

- ***Middle game***: Discussion of strategies and plans for the middle game, including the importance of controlling the centre and securing the king.
- ***Endgame***: Discussion of basic endgame techniques, including how to win with a material advantage and how to deal in stalemate positions.

**4. Game Practice (60-90 minutes)**

- ***Practice games with feedback***: Students play practice games with each other while the instructor observes and provides feedback.
- ***Analysis of games played***: Detailed analysis of games played by students to identify strengths and areas for improvement.
- ***Chess tournaments***: Organisation of chess tournaments to allow students to practice what they have learnt.

**5. Learning Resources (30-45 minutes)**

- ***Books and online resources***: Provide a list of recommended books and online resources for independent learning.
- ***Software and Applications***: Discuss software and applications useful for chess practice, such as those offering chess problems and games against artificial intelligence.

**6. Teaching Methodology (60-90 minutes)**

- ***Interactive lessons***: Lessons should be interactive and engaging, with practical demonstrations and group discussions.
- ***Exercises and hands-on activities***: Students should have many opportunities to practise what they have learnt through exercises and hands-on activities.
- ***Constructive feedback***: The instructor should provide constructive and personalised feedback to help students improve.

**7. Assessment (medium-long term)**

- ***Continuous evaluation***: Students should be continuously evaluated through practice matches and tournaments.
- ***Self-Assessment***: Students should be encouraged to make an analysis of matches played to self-assess and identify areas for improvement.

This module can be adapted according to the specific needs of the learning group. The main objective is to provide a solid understanding of the game of chess and to develop critical thinking and problem-solving skills.

# 9 OPERATIVE TRAINING TOOLS

## 9.1 OTB (Over-The-Board) vs 2D vision

Merely half a century ago, our existence unfolded in a three-dimensional realm. Despite having books, limited TV channels, radio, and photography, our interaction with the world was primarily tactile and visual in 3D. However, the advent of the internet and advanced computers has shifted the average person's daily experience to a more two-dimensional (2D) setting.

Post-work activities involve watching TV, reading and writing on screens, and even creating music using keyboards. While these advancements offer numerous benefits, they have unfortunately led to a diminishing reliance on Bodily-kinaesthetic Intelligence, as the need for its extensive use has decreased.

Recognizing this shift, our program aims to address the impact of this transition on Adult Learners who have grown up in this altered societal landscape. By incorporating chess boards and pieces, the training encourages learners to engage their tactile senses, distinguishing between colours and shapes. When presented with a printed diagram, participants must first recognize the pattern (e.g. Number 2) and then replicate it on the chess board using the appropriate pieces in their designated positions. This exercise promotes coordination, eye-mind movement, visualization, and patience.

It's noteworthy that we meticulously record the time participants require to transform 2D to 3D, along with documenting any challenges they encounter in setting up the chessboard. This data collection provides insights into the learning process and aids in refining the training program.

## 9.2 Pattern recognition

What exactly is a pattern, and why should we commit them to memory? Often referred to as intuition, it stems from familiar experiences. For instance, if action A leads to result B, we begin to recognize and anticipate these patterns. Consider the simple act of greeting a neighbour with a smile; statistically, the response is likely to be a friendly "Hello." Similarly, a crying baby typically garners attention from a parent. Both scenarios illustrate our ability to identify and predict patterns, forming the basis of intuition.

Understanding patterns is crucial because they distinguish humans from Artificial Intelligence. Our behavioural and thinking patterns enable us to process complex information partly automatically and unconsciously. We've learned, for instance, not to touch a hot cup to avoid harm, or that venturing outside in a swimsuit during winter is impractical due to the cold snow.

*Note: Unlike children who, for at least a year, learn to write letters they have been exposed to in their daily surroundings before school, our participants may be encountering the concept of recognizing thought patterns for the first time in their lives.*

## 9.3 Memory

Once the Adult Learners have successfully arranged the chess pieces in the correct position on the board, we will allocate them three to five minutes to commit the configuration to memory. Remarkably, chess professionals, with highly honed memory skills, can accomplish this task in less than 10 seconds— a feat achieved by a seven-year-old girl after approximately one year of hobby chess training. Recognizing that our participants are novices to the game of chess, our approach is to initiate longer timeframes initially, aiming to enhance their memory skills gradually. The goal is to facilitate improved and faster memorization over time through consistent exercises.

Upon correctly setting up the position, we will retrieve the paper and prompt participants to recall the exact piece placements. After the designated three to five

minutes, we will remove the pieces from the board and collect the paper with the diagram.

Participants will be prompted to share their methods for recalling the position. It is entirely normal if they encounter difficulty in remembering, signifying the need for memory training. The subsequent exercise involves honing their visualization and memory skills through attempts to replicate chess positions.

# 10 METHODOLOGY

Examinations are centred around a diverse array of Chess Problems and Chess Studies, which are of particular importance to professional chess players. Unlike challenges derived from completed chess games, these problems and studies are meticulously crafted by Chess Compositors. By exploring a variety of patterns and ideas employed by Chess Compositors, chess players can enhance their pattern recognition during games, facilitating more straightforward decision-making on optimal moves.

Simultaneously, creating and implementing behaviour traps involves a structured five-step process. Firstly, the identification of the target skills, whether scholastic, social, relational, or professional, is imperative. Following this, finding compelling bait involves identifying existing learner interests that can be effectively utilized. Subsequently, setting up the trap requires ensuring its accessibility and alignment with learners' usual paths. The trap line should be maintained cautiously, avoiding overuse while acknowledging even small successes incrementally. Finally, evaluating the catch involves assessing whether learners' skills exhibit notable improvement. If the approach proves ineffective, an analysis of reasons should guide necessary modifications or replacements.

Chess offers a unique avenue to captivate individuals and connect with their primary interests, be they students, children, or workers, facilitating the transfer of specific educational values beneficial for their daily activities.

# 11 OBESERVATIONS

Given that this training module is being applied for the first time, a definitive observation cannot be provided. However, we can hypothesize that even after participating in just one training session, participants may experience significant improvements in their skills and life approach, contributing to an enhanced quality of life.

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