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LIFE LESSONS FROM TEACHING CHESS‡‡‡‡

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Abstract

This article examines how chess education is integrated with Armenia's competency-based State Standard of General Education, adopted in 2021. The standard prioritizes eight core competencies: language literacy, self-awareness and social skills, learning to learn, economic literacy, cultural understanding, digital and media skills, democratic and civic values, and math and science proficiency. The authors explore how chess education fosters these competencies, highlighting its relevance to real-world applications. For example, chess enhances language proficiency through vocabulary building and analytical discussions, promotes self-awareness and teamwork through strategic planning, and cultivates economic understanding by introducing risk management and investment concepts. It also deepens cultural appreciation by linking students to chess's historical and artistic significance, boosts digital literacy through online tools and algorithmic thinking, and reinforces democratic principles by teaching rule adherence and respect for all chess pieces.

Moreover, chess strengthens math and science skills through geometric reasoning and problem-solving. This innovative study connects chess education with competency development, showcasing its potential to transform public education. By aligning chess teaching with competency-based learning, the authors propose a fresh approach to developing critical skills needed for 21st-century learners.

Keywords*: competency-based education, chess education, key competencies, language literacy, cognitive development, digital literacy, democratic values, economic reasoning, cultural appreciation, mathematical problem-solving.*

INTRODUCTION

"In 2021, the Government of Armenia approved the State Standard of General Education

based on a competency-based approach. This new standard consists of 8 key competencies, which are:"

1. Language literacy and competency.
2. Self-cognition and social competency.
3. Learning to learn competency.
4. Economic competency.
5. Cultural competency.
6. Digital and media competency.
7. Democratic and civic competency.
8. Math and Science Competency.

Throughout the education system's history, educational content requirements have evolved. Initially, only knowledge was deemed necessary. However, it later became evident that knowledge alone was insufficient. The ability to apply knowledge became crucial, leading to a focus on skills. Subsequently, it was recognized that the purpose and context of applying knowledge and skills were also essential, along with the attitudes or dispositions. This stage emphasized integrating knowledge, skills, and positions, highlighting the importance of competencies. Today, competency-based education is widely popular worldwide, with its roots traced back to the 1996 report by former UNESCO head Jacques Delors. In his report, Delors introduced the four pillars of education, which are:

- Learn to know.
- Learn to do.
- Learn to be.
- Learn to live together.

Jacques Delors' report expanded the scope of educational requirements by emphasizing the need for more universal training in the 21st century. With modern advancements, individuals have more significant opportunities for action. Therefore, the education system must have a vision that transforms knowledge, skills, and attitudes into action. This concept can be illustrated by the formula: Competence = Knowledge + Skills + Attitudes = Action. Competence is the skilful application of knowledge and attitudes in one's activities.

According to Mulder, competence is an integrated set of knowledge, skills, and attitudes that combine to solve specific problems in a particular context.

1. Knowledge includes facts, Diagrams, ideas, and theories that contribute to understanding a given subject and problem.

2. Skills are the ability to perform specific actions and use knowledge to achieve results.

3. Attitudes are principles based on how a person reacts to ideas, other people, and situations.

Some specialists also include values and motivation as competencies.

Over the years, competency-based learning has been defined as a comprehensive learner-centred system that allows students to move upon demonstrated mastery of transferable learning objectives and skills. In competency-based learning, learning is organized by a student's ability to transfer knowledge, apply skills across content areas, and connect them to real life. Effective competency-based learning promotes lasting knowledge and enduring concepts that require students to transfer their knowledge and skills in and across content areas and authentic, real-world tasks.

LITERATURE REVIEW

The evolution of educational paradigms has led to the current focus on competency-based education. This shift can be traced back to the seminal work of McClelland (1973), who argued for the importance of competencies over traditional intelligence testing in predicting job performance. The concept gained further traction with the publication of the Delors Report (Delors et al., 1996), which introduced the four pillars of education: learning to know, to do, to be, and to live together. Mulder et al. (2007) comprehensively reviewed the competence concept, highlighting its multifaceted nature and applications in various educational and professional contexts. Their work emphasizes the integrated nature of competencies, combining knowledge, skills, and attitudes. The use of chess as an educational tool has a rich history. De Groot's (1946/1978) pioneering work on chess expertise laid the foundation for understanding how chess players think, which has implications for cognitive development. This was further developed by Chase and Simon (1973), who proposed the chunking theory of chess expertise, highlighting how chess can enhance pattern recognition and memory skills. Numerous studies have explored the cognitive benefits of chess. A meta-analysis by Sala and Gobet (2016) found minor to moderate effects of chess instruction on cognitive and academic skills. While research directly linking chess to the eight competencies outlined in Armenia's education standard is absent, some studies touch on related areas:

Language competency: Bilalic et al. (2007) found that chess expertise was associated with verbal ability, suggesting potential benefits for language development.

Economic competency: Levitt et al. (2011) used chess as a model to study economic decision-making, highlighting its potential for developing economic reasoning skills.

Democratic and civic competency: Tanajyan et al. (2017) discussed how chess can promote values such as honesty, cooperation, discipline, foresight, and purposefulness, which are crucial for civic education.

Eight key competencies and teaching Chess

Let us present how teaching chess can contribute to forming 8 competencies. We emphasize their connection with real life.

1. Language literacy and competency

Chess introduces students to a variety of vocabulary that enriches their language skills. For example, terms like zugzwang, vertical, horizontal, diagonal, double threat, and tempo are concepts children learn through playing chess. Moreover, chess encourages students to justify their moves, ask questions, and consider various options, fostering communication skills. Additionally, activities such as solving crosswords, evaluating, and analyzing different chess positions further develop essential language skills.

The objectives of each lesson in the new textbooks are presented at the beginning. Learners read and interpret the introduction. They exchange opinions about the knowledge they have already acquired and the knowledge they expect to gain. They build a dialogue based on logical arguments. This process also contributes to the development of language skills.

2. Self-cognition and social competency

In chess, specific pieces, like the Pawn, can only move forward, teaching that some decisions in life are irreversible. Other pieces, such as the Pawn, Knight, and King, cannot move from one end of the board to another in a single move, teaching that achievements often require small, incremental steps. On the other hand, pieces like the Bishop, Rook, and Queen can move swiftly from one end of the board to the other, demonstrating that some events in life can happen quickly and all at once. Through these chess pieces, we impart lessons about self-cognition and the nature of life's challenges.

Chess offers a valuable opportunity to teach students essential social skills like cooperation. The cooperative nature of chess, where Diagrams work together and assist each other, is crucial for

success. For example, the queen, rook, and other pieces often focus on protecting a single pawn, illustrating the importance of mutual support.

Additionally, chess teaches us to anticipate and calculate our opponent's moves, a valuable skill in public life. While many people act without considering the consequences of their actions, chess encourages us to think ahead and consider our opponent's possible responses to our moves.

In chess, as in life, assessing the position (situation) before making any move is essential. From this perspective, evaluating the position teaches learners to recognize the importance of each piece in a given situation. It helps them appreciate the significance of even lower-value pieces. Such ongoing analyses cultivate skills in assessing and supporting the people around them. This also contributes to the development of social skills.

Chess is of great importance when focusing attention. It is impossible to succeed in chess without keeping your attention focused all the time. Even a moment's slack can decide the outcome of the game. "Simple lapse in concentration is all an opponent needs to flip the game on its head, leaving us wondering what happened to our beautiful position"(Ashley, 2024, p.65). Herbert Simon, winner of the Nobel Prize in economics, noted a problem of lack of attention in the modern world. "The wealth of information means a dearth of something else." a scarcity of whatever it is that consumes information. What information consumes is rather obvious. It consumes the attention of its recipients. Hence, a wealth of information creates a poverty of attention and a need to allocate it efficiently among the overabundance of information sources that might consume it"(Simon, 1971, p.40).

3. Learning to learn competency

Learning chess can significantly enhance the competence of learning to learn. Unlike other subjects where topics frequently change, chess involves consistent practice and learning from each game. This constant engagement contributes to the development of chess-playing skills and the ability to learn from mistakes. Playing chess regularly provides an opportunity to learn from every game and avoid repeating the same errors. In chess, the teacher can give feedback by analyzing the game. And feedback is one of the best ways to learn.

The mini-games assigned at the end of the lesson related to the taught topic help learners engage with and understand the subject more effectively. They become motivated and realize that by applying the knowledge they have acquired in practice, they can achieve victory. This also

fosters the development of discipline and self-organization. Learners independently assess their capabilities and seek to improve them before transitioning to the practical game. In this way, their ability to learn how to learn is also cultivated.

4. Economic competency

At first glance, chess may seem unrelated to economics. However, teaching chess can help develop economic competency. For instance, the concept of sacrifice in chess is akin to making an investment in economics. When we sacrifice a piece in chess, we accept a short-term material disadvantage with the expectation of gaining a significant advantage or victory later in the game. This aspect of chess can foster economic skills such as investing and understanding risk. The term 'risk literacy,' coined by Gerd Gigerenzer in his book 'Risk Savvy: How To Make Good Decisions,' is as essential today as literacy was in previous eras. Chess can help develop this critical skill, teaching children to assess risks and make informed decisions, which is essential for success in economics and life.

Another example is the calculation of making exchanges. Like entrepreneurs, we constantly calculate what we lose and gain when playing chess. We also highlight the problem of obtaining a material advantage and realizing it.

5. Cultural competency

The 9th world chess champion, Tigran Petrosyan, once described chess as a combination of game, art, and science, all of which are essential components of culture. Chess allows children to develop their cultural competencies by analyzing and playing games, allowing them to appreciate the beauty of the chess game. Additionally, chess is integral to a nation's history and culture, emphasizing its cultural significance.

Students gather information about the lives and creative paths of famous chess players. They become familiar with the successes of chess players from different countries and appreciate the achievements of their compatriots. They value these accomplishments to present their culture to the world.

6. Digital and Media Competency

Armenian chess textbooks are equipped with QR codes, allowing schoolchildren to enhance their digital literacy. In Armenia, students learn to play chess and follow chess tournaments through online platforms. They also engage in projects that involve the use of media resources and digital tools. Chess education also fosters algorithmic thinking, as students learn checkmate patterns such as checkmate with a Rook, checkmate with two Bishops, and checkmate with a Bishop and a Knight. Additionally, digital tools teach students with special educational needs (SEN).

7. Democratic and Civic Competency

Chess embodies elements of democracy by emphasizing the importance of every piece on the board. Even the absence of a single pawn or its poor positioning, in conjunction with the arrangement of other pieces, can significantly impact the game's outcome. While chess assigns different values to its pieces, this does not detract from its democratic nature; instead, it mirrors real life, where each specialist holds a distinct value.

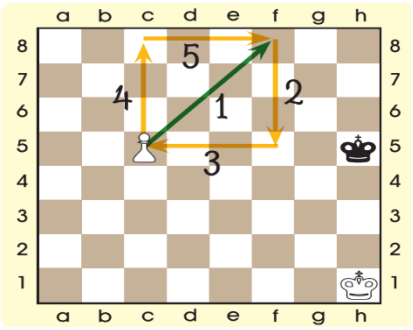
A critical civil aspect of chess is the transformation of a pawn into a queen or another higher-value piece. This highlights the significance of pawns, as they can evolve into more influential pieces under certain circumstances.

Moreover, chess instils respect for rules, a vital aspect of civic education. Following the rules is essential in chess, as it promotes fairness and order in civil society.

8. Math and Science competency

Learning chess enhances mathematical knowledge in various ways. Students learn basic counting and acquire simple geometric concepts through chess. They also develop a spatial perception of the environment. For example, when studying endgames, we use the square rule—

students can construct squares by drawing triangles in diagrams.



Additionally, chess provides a practical application for mathematical problem-solving. For instance, in a chess tournament, how many points did they score if player X won 6 games, drew 4, and lost 1? Another example: if player X won 5 games, drew 2, and lost 2, and player Y won 4 games, drew 3, and lost 1, which player scored more points?

Moreover, chess teaches the concept of pressure, which is also covered in the middle school physics curriculum. Through chess, students can understand how pressure influences decision-making and strategy.

By establishing a connection with mathematics during the assessment of positions and the execution of actions, they can differentiate between primary and secondary operations.

CONCLUSION AND FINDINGS

Thus, teaching chess can significantly contribute to developing the 8 key competencies outlined in Armenia's new standard of general education. This article has highlighted several examples of competency development, but the scope is much broader, underscoring chess's substantial potential for public education.

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Note: *The faces of the children depicted in images are visible, and all ethical considerations are strictly maintained. Their inclusion is done in full compliance with ethical guidelines, and explicit consent has been obtained from the parents or legal guardians for their participation and appearance in this picture.*

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