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CHESS IN INCLUSIVE EDUCATION

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ABSTRACT

This paper is the result of a thorough analysis and evaluation of the literature on chess instruction strategies for students with a range of learning challenges, low attainment, moderate, specific, severe and profound learning difficulties.

The studies conducted by the Chess Scientific Research Institute's psychological and inclusive working group are beneficial for understanding the challenges faced by chess instructors when teaching students with special education needs, the challenges these students face during chess lessons, and the impact chess instruction has on these students' behaviour, social-emotional growth, and cognitive development. Nevertheless, more research is needed to fill in the gaps in the knowledge about how to teach chess to these kids. For example, it is necessary to validate the effectiveness of chess as a therapeutic tool when working with them and to develop strategies, means, and tactics for adequately instructing and involving these kids in chess lessons. Additionally, teachers' perspectives on the value of chess for the mental development of kids with SEN should be altered.

Keywords: *chess, chess research, inclusive education, special educational needs, chess teacher, primary school age, learning, teaching methods, games, attention, memory, speech perception, knowledge.*

INTRODUCTION

Since 2011, chess has been taught to all learners in Armenian public schools from 2nd to 4th grades. Teaching chess, as a mandatory subject in schools, is a new phenomenon in the Armenian reality. It is a unique training tool for developing creative thinking, which requires the ability to independently run a problem, creatively solve it, and have flexibility of thought. Since adding chess to school curricula, psychologists have implemented multi-stage research. As a result, it was

Research has found that teaching chess in schools contributes to the development of students' intellect, creativity, memory, attention, and watchfulness (Aghuzumtsyan & Poghosyan, 2014). Summarizing the results of this research, we may conclude that chess as an academic discipline is mostly referred to as a positive factor for pupils' personal development.

Taking into consideration the educational goals of elementary school standards for Chess as a curriculum item, in 2014, the Chess Research Laboratory set forth relevant research objectives and pertinent methodology. The purpose is to detect and compare the level of logical thinking among groups of students learning chess and those who do not. The methodology was the Raven progressive matrices. Methodological analysis reveals that, according to the correlation principle in matrices, 4th-grade students learning chess exhibit a higher degree of efficiency in two key areas: a) differentiating the main elements of structure and identifying relations between them, and b) identifying the missed element and tracing comparison with the given examples. According to the Similarity Principle, 4th-grade chess learning students successfully applied their ability to identify symmetry and linear differentiation in decision-making. According to the Progressive Change Principle, 4th-grade chess learning students managed to use the skills of dynamic (quick) observation, following changes, dynamic attention, and imagination; consequently, their logical thinking has developed (Khachatryan & Sargsyan, 2014).

There are numerous studies on the positive impact of chess on children's psychological processes. Some researchers even propose the concept of chess therapy. In particular, Chess therapy is a form of psychotherapy that attempts to use chess games between the therapist and client or clients to form stronger connections between them towards a goal of confirmatory or alternate diagnosis and consequently, better healing (Fadul, 2015).

Summarizing the results of the psychological research, researchers conclude that Chess as an academic discipline is mostly referred to as a positive factor for pupils' personal development (Mirzakhanyan, Gevorgyan, Sargsyan, & Daveyan, 2017).

Interestingly, the researchers have also conducted experimental studies to identify the methodological

issues of chess teaching. Based on the research results and conclusions, researchers recommend finding the best way to motivate and, correspondingly, teach pupils. Teachers must recognize and identify the learning styles of their pupils and adequately respond to their learning needs. Those responsible for implementing and controlling the chess in school program have to initiate the implementation of active and reflective learning practices in chess lessons by modeling and sharing good practices among teachers. Teachers may let students set their own learning goals and prevent surface and impulsive learning styles by making changes in their assignments and learning tasks (Sargsyan & Avetisyan, 2019).

Chess as an educational tool is widely used as an essential way for developing the intellectual skills of schoolchildren. Students' progress in chess is mostly in line with their skills and knowledge in their native language and mathematics at the primary school level. The role of chess as a school subject has been continuously increasing, as pupils learn to implement chess skills to develop their problem-solving abilities (Gevorgyan, Gevorgyan & Sargsyan, 2021).

Chess as an educational subject has significant potential for the overall development of children, both in terms of transferring knowledge and skills to individual subject areas and for use in inclusive education. The development of this potential is significantly conditioned by a variety of such direct and contextual factors as teacher training, the individual psychological characteristics of students, the goals, methods, and technologies of teaching, the optimal complexity of the subject, and the cooperation between teachers and parents (Gevorgyan, Ispiryan, Sarkisyan & Tadevosyan, 2023).

Chess is utilized in the educational systems of various countries worldwide as a diagnostic, developmental, and educational tool for working with special needs. In the field of inclusive education, experimental research in recent years proves that Chess play helps reduce communication disruptions in properties and types of attention, memory, and thinking of people with hearing impairments, thereby increasing opportunities for those people with limited health capacities to improve their welfare (Mikhaylova & Makhov, 2018).

Chess playing positively affects individuals' metacognition and, consequently, increases an individual's inclusiveness. The researchers can build an algorithm to maximize the effect of an individual's inclusiveness. Chess play is an effective pedagogical tool to improve individuals' metacognition and, consequently, increase their inclusiveness. Chess play encompasses a wide range of metacognitive abilities and skills, e.g., an individual's problem solving, creative thinking, planning, strategic thinking, logical thinking, and others. The conclusion is also that the proposed sequence of the actions first focuses on the development of individuals' metacognition, and, later, the enrichment of this individual's inclusiveness (Ahrens, et al., 2024).

LITERATURE REVIEW

The Republic of Armenia declares universal inclusive education as a guarantee of every child's right

to education. Inclusive education policy is aimed at ensuring access, equal participation, and quality of education for every child. The newly formed system provides an opportunity to organize the education and upbringing of children with special educational needs without separating the child from the family, ensuring their comprehensive social development and including them in a public educational institution.

Currently, researchers in the educational system of the Republic of Armenia are conducting experimental studies to reveal the achievements and contradictions of inclusive education.. In particular, in Armenia, the inclusion of students with special needs in regular classrooms underscores the need for robust support for teachers, students, and communities. Research in recent years has aimed to explore general education teachers' views on inclusion, emphasizing the need for extensive training and better resources to achieve effective inclusivity (Harutyunyan, 2024).

Since 2014, researchers from the psychological and inclusive groups at the "Chess" Research Institute of Khachatur Abovyan Armenian State Pedagogical University have conducted large-scale experimental studies in chess education within the context of inclusiveness.

Research was conducted among 15 2nd and 3rd-grade children with special educational needs in schools 122, 153, and 197 in Yerevan. The schoolchildren involved in the research had mainly speech, mental, locomotor system, behavioural, and other types of disturbances. The research work was scheduled in three phases. The first stage of the research was to study the behaviour of the children with special educational needs both at chess lessons and other school subject lessons. The study consisted of psychological observation and analysis of video materials.

The results of the study evidenced difficulties in focus of attention, distraction, motor restless behaviour among (60%) of children, alienation or self-segregation or isolation because of difficulties in contact and communication among 4 (26,6%) of children, indifference, lack of interest and, as a result, absence of aspiration, motivation to reach a target among 2 (13,4%) of children.

The results of the first phase of the research inspired the logic of the second one: the group of children with special educational needs and the rest of the school children were asked to write an essay on the topic "What has chess given to me?". The essay aimed to find out the precise position that children had towards chess as a school subject, the possible influence of the latter on their conduct, and, finally, to fuel their reflection.

The further analysis of the essays uncovered a series of personality characteristics that children had mentioned with particular frequency: *Patience, Aspiration, Motivation to reach the target defined, skills to act upon the ideas and to find solutions, Ability to follow the rules of game honestly, Trust upon one's own power, Ability to assume responsibilies, to learn from one's own mistakes, Time and acon planning ability, Ability to make decisions and to assume the responsibility for one's own deeds, Determination, Modesty, Formation of cooperation skills* (Charchyan & Khudoyan, 2016).

The third stage of the research aimed to stimulate self-control, patience (the ability to wait patiently), increase self-esteem, and enhance cooperation skills and capacities among children with special educational needs through specialized chess teaching methods. The potential of teaching/learning chess through cooperative learning, scenario-role-game teaching, therapeutic, and stimulating methods among the children with educational needs was explored in this stage of the survey. As chess itself comprises elements of cooperation, during the lesson, the children were asked to swap with partners regularly while playing chess. The chess problems and assignments were completed in groups with at least one child with special educational needs, who must autonomously offer the first step towards a solution and discuss it with the rest of the group. The research also included scenario-based games where children with special educational needs were assigned prominent or key roles, such as the chess queen, which was easily recognizable by the crown. Thus, when these children approached the board, they were entitled to offer a move to their group of children. Such games would make evident the process of self-evaluation, self-esteem increase, as well as the development of self-regulation, self-control, and conduct shifts among the children with educational needs in line with the child's awareness of the characteristics of the part that he was playing.

Thus, the results of the research conducted allow claiming that using chess and special methods of teaching chess enables a contribution to the development of conduct-regulation among the children with special educational needs and to the formation of cooperation abilities among them, stimulating such personal qualities as self-control, patience, self-confidence, etc. (Charchyan & Khudoyan, 2016).

Research has been conducted on the participation and involvement problems of children with special educational needs during chess lessons in grades 2 to 4. The research aims to identify the challenges of learning chess for children with special educational needs students and the difficulties teachers face in teaching chess to them, as well as the opportunities for applying the knowledge gained from chess in real-life situations (Charchyan & Kostanyan, 2019).

As a result of interviewing, observation and questionnaire survey, it becomes clear that teachers' approach to involving CSNE in chess lessons is quite different: a) CSNE should mandatorily participate in the lesson, b) they should participate at least to some extent, c) if they cannot, participation is not a mandatory requirement, d) the presence of these children in the class is meaningless because they interfere with the lesson, and so on. According to research conducted with 2nd-4th-grade schoolchildren at five inclusive schools in Yerevan, teachers reported that 75% of CSNE students participate in chess lessons, and 80% of them can identify the pieces. 70% of CSNE face difficulties in remembering the moves of a pawn, a knight, and a queen (Charchyan, 2019).

In 2022, the psychologists of the "Chess" Scientific Research Institute carried out an experimental study. The research aims to reveal the level of performance of the working capacity components for chess-studying schoolchildren. It is noteworthy that the sample of the research includes children with special

educational needs (SEN), who were one group of participants. The experimental research was carried out by applying the "Landolt rings" methodology included in the "Egoscope" psychological analysis and testing complex. The analysis of the results demonstrated the following: 1) Students with Special Educational Needs, who showed low academic progress, as a result of the experiment demonstrated a high index of endurance, as well as students with high and medium academic progress, 2) The indicators of the reliability of the average work precision and working capacity, as well as the average efficiency level, are also the same among students with high, medium and low academic progress, 3) The results of information processing are medium for students with low and medium progress and high for students with high progress (Khachatryan & Sargsyan, 2023).

DISCUSSION

Based on the scientific results obtained from the analyses of experimental studies, the psychologists of the "Chess" Scientific Research Institute and the team engaged in the study of issues of inclusive education have developed a methodological package, which is a support for chess teachers.

In 2015, the educational methodical manual "Chess Educational Research", intended for chess teachers, developed psycho-pedagogical methods to teach children requiring special educational conditions in chess classes (Chess Educational Research Centre, 2015).

Collaborative method. In the process of teaching chess, the application of the cooperative method starts from the moment of forming pairs, placing them opposite each other, opening the chessboard, and arranging the pieces. In a chess lesson, the teacher can form pairs, taking into account the ability level of the children. When using this method, the main goal of the game is not to win, but to play together and teach each other. The application of the method will be more effective if the student, with even a small progress, changes roles the next time and is chosen as a teacher.

Method of persuasion. The application of this method is carried out through conversation, transfer of theoretical information, and debate. The teacher can choose the main topic of the day's lesson and conduct the conversation on that topic, accompanying the conversation with the demonstration of didactic materials. Then he forms groups of 3-4 students, approaches each of the groups separately, conveys the information, explaining the material with concrete examples. Then he suggests that one of the groups join the other group and conveys his perceptions and imaginations to the other students in the group. Thus, each group, successively, joins the other groups and transmits what it knows. When the exchange of ideas ends, the teacher poses specific questions around which the discussion and debate proceed. The effectiveness of this method lies in its ability to give children, alongside the teacher, the opportunity to listen to their peers and consider their perspectives.

Verbal method. This method enables children to create, reproduce, and develop their chess thinking

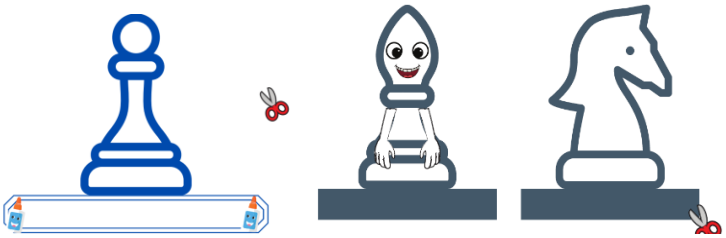
skills. Children can tell by comparing the actions of each piece to the actions of characters in a fairy tale, analyzing and comparing.

The teacher invites the children to divide into groups of 3-4 people and assigns each group a title, such as "The King and the Soldier" or "The King and the Horse". Children invent stories, fairy tales…Another version of the verbal method is *"Make up a story about a piece."* The instructional manual also describes in detail the *"The Method of Jigsaw", "Brain Sketching", "Mind map"* for targeted chess training in the context of inclusiveness (Chess Educational Research Centre, 2015).

In 2022, the *"Waiting Step"* manual was published by the professional team of the Chess Research Institute. The manual is intended both for teachers teaching chess in public schools and for specialists and coaches engaged in chess activities in educational systems (children studying in preschool and primary classes).

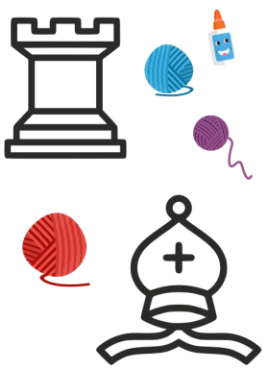
For instance, *Game: "Soldiers' Debate"*. Let us stage finger theater together. Cut it, soldiers, glue the indicated sections to the right and left, about the size of the index fingers (glue on the glued parts drawn). Make up a funny story and tell it to your friends (Kostanyan & Charchyan, 2022).

Picture 1. Puppet show with chess pieces



Game: "Draw a border with threads of different colors"

Picture 2.

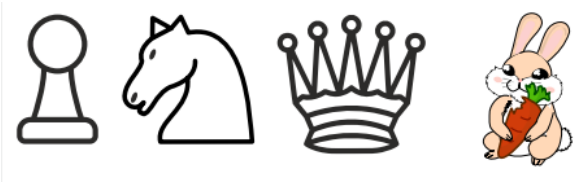


Game: "Take the "nonexistent" piece in the circle".

Picture 3.

Game: "Take the "nonexistent" piece in the circle".

Picture 4.

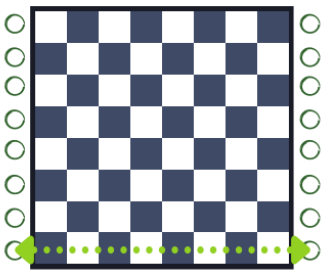


Game: "Complete and name the given pieces."

Picture 5.

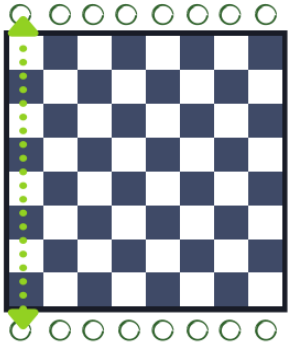
Task 1(a): Connect the opposite dots each other. Name those lines in chess.

Picture 6.



Task 1(b): Connect the opposite dots together. Name those lines in chess.

Picture 7.



The tasks presented in the manual can be used with students with special educational needs (physical, verbal, mental, auditory, as well as emotional, behavioral, and other developmental disabilities), adapting them to their needs. The authors found that several exercises can be conducted with a chess teacher to help students develop their communication abilities.

CONCLUSION

As we know, children with various disorders of psycho-physiological development study in inclusive classes, who, despite their limited abilities, can master specific chess knowledge by using appropriate psycho-pedagogical methods. These methods create an opportunity for the child to take an active part in the intergroup discussions organized during the lessons, ensuring the development of the child's communication skills. One of the main features of using the presented psychopedagogical methods is that these methods provide an opportunity to involve not only children with special educational needs, but also the whole class in the learning process. The presented methods are applicable in institutions implementing inclusive education and inclusive classes in the process of teaching chess to children with special educational needs.

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