THE USE OF MINI-GAMES IN CHESS EDUCATION††††

DOI:10.24234/miopap.v11i2.40

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Abstract

This study examines the effect of integrating minigames into chess training on the interest and engagement of new players compared to traditional teaching methods. The results show that the enthusiasm of most new players increased significantly when exposed to the minigames. The experimental group that used the curriculum enriched with minigames showed substantially higher interest than the control group that received regular instruction. Current research supports these findings by highlighting the exciting nature of minigames, making learning more playful and exploratory. Minigames provide a structured yet accessible way to break down the complexity of chess, improve motivation, and promote a positive attitude toward learning. The novelty and variety of minigames encourage continued interest and engagement, potentially reinvigorating chess education and fostering engagement in the chess community. Research of long-term effects on different populations and individual learning preferences is warranted to fully understand the potential of minigames to improve chess training.

Keywords: *chess education, mini-games, engagement and motivation, game-based learning, skill reinforcement, pedagogical tools, traditional vs. modern teaching methods, learner preferences, educational technology, cognitive development.*

INTRODUCTION

Chess as a game not only remained a combating and profound fight for several centuries but also a tutor. The difficulties are thus in providing effective learning, motivation, and value-added with an optimum fun factor for the target persons. Standard education procedures involve disseminating information typically imparted in forms of writing, lecture, and discussion, strategies that, while very important, do not grab the learners' attention in ways that modern methods do. This absence is an opportunity to create a subject of discourse and to plunge into deeper considerations of what can be done differently; the most vigorous possibility is the incorporation of minigames.

Engagement and Enjoyment: A warrant associated with utilizing minigames in chess education is the idea that students engage in fun activities. Traditional methods of transferring knowledge may often induce some learners to consider chess as something they cannot understand or as something that they are not interested in. Minigames eliminate this barrier by adding an element of gameplay that prompts the user to discover and try new things. Minigames help create a positive attitude toward the learning process, whereby learners will consistently engage in the learning process happily throughout different lessons, including chess.

Skill Reinforcement: Minigames may have specific learning goals that are different from those of the overall game; these goals can be basic strategies, strategies, tactics, or techniques of checkers. Such objectives help to consolidate theoretical concepts within functional and work-

oriented perspectives. For instance, in a minigame that might be based on tactics, the same might involve coming up with specific combinations of moves within a given timeframe. When this is achieved, it will improve the individual's ability to detect patterns during an actual game. This targeted skill reinforcement enriches understanding and can enrich practical knowledge, given that the transition from considering theoretical material to practical training takes place seamlessly.

Diversity in Learning Styles: Each learner is a distinguishable client influenced by different factors, including his or her preferences for how he or she learns. It is necessary to understand that some people perform in rivalry conditions while others exploit teamwork or experimental work more. As for problems with diversity, minigames address this issue by presenting learning activities that meet differentiated learning styles. Regarding preferences, minigames can offer a flexible approach for each learner: those motivated by competition, those who like to solve problems, or those who succeed with the help of spatial and tactile experiences. This ability to adapt makes it possible to consider a higher range of learners to identify with the process of learning chess.

Chess education, for the most part, must be available to everyone to penetrate society and cause massive changes. Thus, it can be concluded that minigames help make chess more accessible to a larger audience by reducing the game's concept to not engaging or welcoming. The minigames are not lengthy because people with busy schedules can spare some time, make at least a minimum progress, and continue to practice later. Besides, due to the availability of many different minigames, ill or low-skill learners will always have something to work on, thus experiencing the development process and achieving real achievements.

Technological Integration: As we discuss the educational environment of the present day, information and communication technologies are undoubtedly acknowledged to be the key drivers of change influencing various learning processes. They include the incorporation of minigames into various online platforms or chess applications as a way of making chess learning more productive and accessible through the use of technology. Thus, via digital platforms, learners are offered a vast array of minigames to solve and get results almost instantly and control their progress. Apart from addressing technological changes, the use of games in learning chess also differs from traditional learning by offering an element of novelty that helps learners stay interested and engaged for longer.

Research Objectives

1. To assess the level of overall and individual abilities of learners and to determine the

effectiveness of minigames in enhancing certain aspects of chess knowledge

2. To evaluate if minigames serve to motivate learners could be achieved by

3. To learn more about which minigames are most effective for the teaching of chess, it is necessary to compare different types of minigames.

Significance of the Study

Chess education is not only significant within the context of the game; for this reason, the integration of minigames has a broader importance.

This study explores the hidden potential in the application of minigames for learners and educators; chess is regarded not just as a board game but as a powerful and versatile tool for learning that can transform the approach to teaching. Exploring these benefits contributes substantially to two interrelated domains: Fields of Educational psychology and gamification.

Informing Engaging and Effective Teaching Methods: The techniques used to teach chess, including theoretical approaches, simulations, and pattern analysis, may be obscure to confident learners. The use of minigames leads to a shift in the thinking process thanks to the novelty of the concept and the amusement factor. Realizing that such minigames have these potentialities would become a significant step toward replacing old teaching paradigms. In learning the exact portion of chess that minigames reinstate – be it visual identification, critical thinking, or working within a time constraint – educators can better teach the overall chess game so that it becomes more engaging and helpful to students.

Its importance can be seen in the improved conditions for transforming chess classrooms into engaging spaces for learning where students are not passive recipients of knowledge but rather people who solve problems, test ideas and use existing theories in new contexts. It is in sync with the current approaches to how learning should happen – a process during which learners become not mere receivers of information but rather constructors of knowledge. Thus, the current analysis adds to the existing discussion in educational psychology concerning the roles of the contingency approach and the value of the differential use of instructional modes based on the needs and preferences of the learners.

Contribution to Educational Psychology: Ensuring that students understand course content and can apply the information is a primary concern in educational psychology: this type of research proves beneficial in this field. Chess minigames include the best use of the gamified approach to cognition and motivation and the impact of learning processes. This paper explores the thought

patterns that elaborate on minigame playing and, thus, the framework used in understanding how learners solve challenging problems, make choices, and consequently acquire problem-solving strategies.

Furthermore, there are positive prospects of minigames for chess education regarding the transfer effect statement: these ideas provide additional arguments to the discussion of transfer skills. The lessons are integrated into these mini-chess battles where the learners sharpen their chess abilities and develop other vital skills relevant even in everyday life, including problem-solving, the ability to think outside the box, and perseverance. Therefore, this study's findings are added to the literature on developing educational programs that seek to develop a well-rounded skills manpower base for society and the world.

Advancing Game-Based Learning: Games in education have received attention in recent years as they increase motivation and engagement and improve learning indices. Chess, an intricate game on the strategy level, creates a rich background for research in the game-based learning environment domain. Thus, this research into minigames accredits to the ongoing paradigm of game-based learning and demonstrates the efficiency of dedicated, engaging learning experiences incorporating skills development aspects.

In turn, the research exploring the role of minigames in chess education contributes to a better understanding of game design principles. The generality of these principles in other areas of study enhances the generalizability of results from this study. This approach stresses the need for highly specialized and effectively designed games that engage learners and turn learning into entertainment across learning fields.

Literature Review

Chess, a board game deeply rooted in tradition and culture, has gained immense popularity among scholars and strategists and has always been on a researcher’s radar. A conventional learning strategy is used in chess teaching, whereas traditional teaching-learning strategies stem from abstract theories and accumulated analytical data. Still, with the changes in educational psychology, the focus has shifted to other methodologies, especially the innovative one that includes game-based learning. Introducing minigames, brief in nature and with specified goals, into this category noteworthy, flexible, and innovative branched appears to hold high potential across educational settings for improving skill development and motivation. Drawing upon the literature, this review offers insight into current knowledge concerning the possibilities and potential research directions

of incorporating minigame learning into chess study. (Fereira, 2023)

Traditional Chess Pedagogy: Several teaching approaches have been used in practice, with an emphasis on the traditional lecture-based style of teaching, elaborate scenarios of games, and specific theories. Although this approach is highly advantageous in building the initial knowledge base, it might not be as effective in keeping the learner interested and receptive in the long queues. Research indicates that conventional approaches may not effectively serve the needs associated with different learners' needs and preferences, thus questioning the applicability of chess teaching and learning strategies on learners (Janković and Novak, 2019).

Game-Based Learning in Educational Psychology: Educational psychology has also undergone a revolution focusing on using games as an efficient method in the teaching process. Games are acknowledged for stimulating and involving learners, encouraging their involvement, and making learning laid-back. Perversely, game-based learning principles reach more than a dozen domains or parts of learning and are indicated to provide a holistic approach to the learning process to a student and expand from traditional academic disciplines (Plass et al. 2015).

Mini Games: Skill acquisition as part of the skill development: Minigames are one of the types of game-based learning that have received attention to accrue positive impacts on skill development and learning motivation. Unlike the long-drawn-out chess matches, these games have less time control and deal with single-point objectives only. Although minigames are not a novelty, their use in chess education is a fragment of the research area that has received insufficient attention. Given the above discussion, it can, therefore, be said that the characteristics of minigames, which have been postulated by Deterding et al. 2011 as being short and tightly phased, are indeed appealing to learners who prefer a modern type of education that is compact, intensive and fast-paced.

Potential Benefits of Mini Games in Chess Education: Minigames use in chess education has not been researched extensively thus far. However, the review above of minigames' state of the art and their implementation in various domains can shed light on their advantages. Minigames are purposively developed to accomplish specific learning outcomes; this enables learners to participate in developmental activities predicated on well-defined objectives and offer practice in real-life, practical situations to apply theoretical knowledge. Research in cognitive psychology and educational intervention points toward children's engagement in focused and interactive tasks, which tends to improve fare pattern recognition, decision-making, and other cognitive skills (Sala et

al., 2016).

Current Gaps in Knowledge: There has been much talk about the prospect and potential of minigames, even as there are mixed signals regarding the effectiveness of their inclusion into learning contexts—let alone in chess education. Current research also recognizes the potential of performer-based learning and the possible advantages of minigames in other learning areas. However, it is possible to identify the absence of efforts to produce consolidated academic work dedicated to analyzing its applicability and consequent effects on chess teaching and learning (Aliotabi 2024).

Research Gap: This is obvious given the peculiarities of chess as the learning domain, along with the difficulties and prospects implied. Evaluating chess as a potential for applying game-based learning principles, the following aspects should be mentioned: Chess is an activity that requires strategic thinking and the ability to analyze a patterned system and make decisions within its context. The literature under review fails to offer pertinent and sufficient information on how minigames, implementing different specific learning goals, affect the general learning of skills and motivation and results in the process of chess instruction. (Campitell and Gobet 2004)

A research study or proposal forms the framework of data collection and analysis used in dissecting a research problem to arrive at valid conclusions. In chess education, a topical issue of using the new approaches offsets the traditional approach based on mnemonics and prompts to turn to the influence of minigames. This study's research design is an experimental method using pre and post-tests involving a control group taught with conventional chess teaching strategy in contrast to another group trained using the chess minigames. To illustrate these positive and negative effects, the specifics of this design, including the control and experimental groups, try to understand the potential of placing minigames into the process of learning chess.

METHODS AND METHODOLOGY

Comparison of Traditional and Mini Game Enriched Approaches: The rationale of using an experimental design here is to establish the differences in the results of two different forms of chess training. Traditional tutors, forming the control group, undergo typical chess training in one-on-one lessons, easily reproduced in classrooms and chess clubs. In contrast, the children in the experimental group participate in a curriculum implemented in the form of minigames, which also brings the notion of a game and its interaction elements to the learning process.

Control Group (Traditional Chess Teaching).

Nature of Instruction: The control group represents the traditional learning model, in which students attend their lessons, practice implementing the theoretical knowledge, and analyze typical chess games. This regular group will act as a control group to help compare the experimental group's results. The choice of traditional instruction can be considered rational, as its fundamental principles are widely employed in chess training.

Content Delivery: Control group participants are given accumulated knowledge about chess education methods. Lessons may involve fundamental chess rules, opening ideas, frequent tactics, and end games. The instructional content remains loyal to popular textbooks, guides to playing chess, and other readily available teaching aids.

Assessment Measures: The control group's assessment entails pre- and post-treatment using standard evaluation tools such as chess ratings, game inspection, and normative achievement tests. The objective is to find an increase in the participants' retention of chess ability and knowledge after applying conventional teaching methods.

Experimental Group (Mini-Game Enriched Curriculum)

Nature of Instruction: In the experimental group, participants deviate from the conventional approach toward class learning; in their case, the curriculum contains minigames. These implemented minigames are highly chosen to favour a single concept or subskill in chess throughout the learning process. The given minigames are additional games that complement conventional concepts and lessons.

Content Delivery: The experimental group's set of tasks is designed so that minigames are infused into the curriculum within typical lessons, focusing on a balance of conventional work and game-based content. The minigames range from openings to tactics and endgames, making the traditional curriculum coherent with its goals.

Assessment Measures: The experimental group's assessment method is also like the control group's pre- and post-assessments. However, the assessments are designed to measure the effectiveness of the minigames as a means of devising skills and motivating learners. Outcomes could be the results achieved within the minigames, the participants' subjective impression of engagement, and changes in distinctive sets of skills.

RESULTS

Quantitative procedures are conducted within the control and experimental groups to evaluate the extent of increase or development in chess abilities. Quantitative data can be quantified, giving statistical findings, such as chess ratings, game analysis information, and scores on standardized tests. The understandings of the two groups are as follows: A comparison of the two groups will report the differences in skills acquisition.

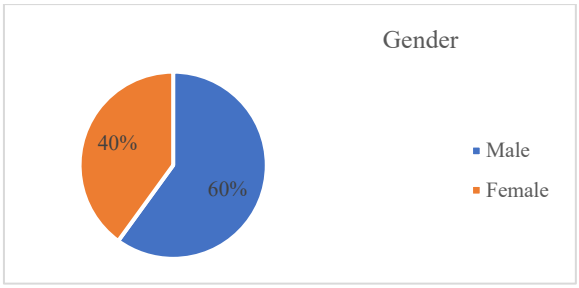

Diagram 1. Gender 25 total students where 60% are male and 40% Female

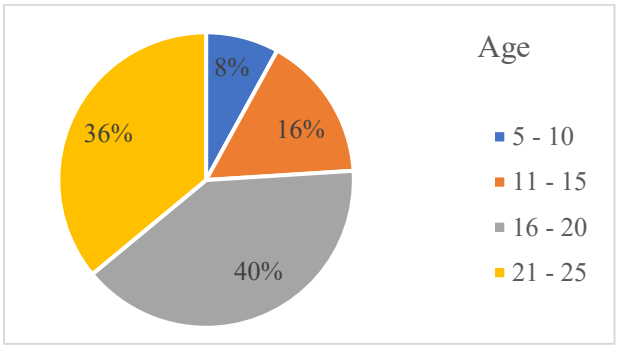

Diagram 2. 25 students 2% 5 – 10 years old; 16% 11 – 15 years old; 40 % 16 – 20 years old; 36% 21 – 25 years old.

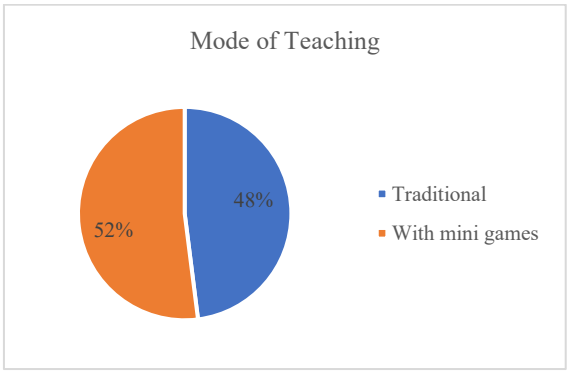

Diagram 3. 48% Traditional 52% With mini-games

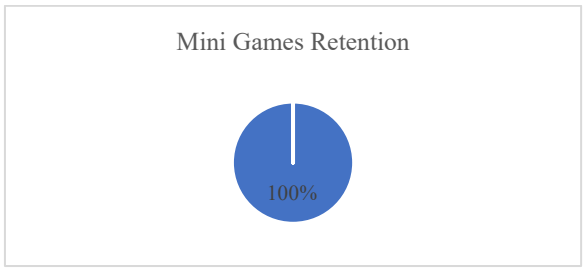

Diagram 4. Retention with minigames is 100%

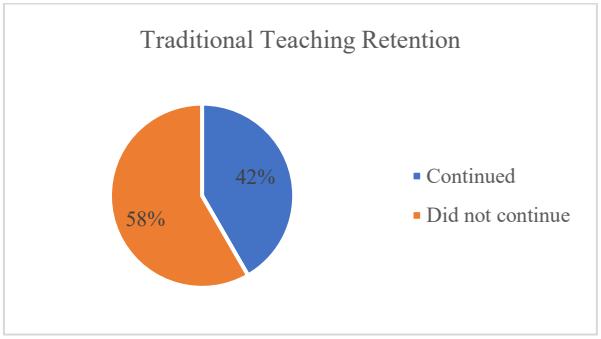

Diagram 5. Retention with traditional teaching 42%

CONCLUSION AND FINDINGS

Long-Term Impact: Concerning objectives, the final study review might not reflect the long-term consequences of the treatment due to the study's time limitations. Future research directions can focus on whether the effects of minigame integration will endure after more time has elapsed and if it will continue to result in better student learning in the long run.

As the study aims are crucial, the following research problem will be solved in this report: analyzing the impact of using minigames in chess education on new players' interest and engagement compared to traditional teaching. We will discuss the implications of the result for the increase in players' engagement in chess learning. While ranking new players, most revealed increased interest levels whenever they encountered minigames. Concerning the level of interest in the lesson, the experimental group, which used a system that contained minigames, outperformed the control group that received conventional instruction. The observation is true when viewed from the lens of existing research literature. Because of the interaction between the learner and the computer, as e.g. seen with Minigames, the approach can be considered to be fun and exploratory, unlike the traditional methods used in teaching. This way, goals are clear and help inexperienced players gain confidence and experience after each match, even though chess seems complex.

Dividing knowledge into small portions based on the tasks makes chess more enjoyable and spurs the desire to learn. Another factor is new and unconventional approaches to education and diversifying educational activities. Although traditional means can effectively explain ideas, they do not necessarily introduce sufficient novelty for the user to keep investing time, especially for multi-faceted players who are just getting interested. Minigames are a technique that gives a new point of view and options for exploration. This element increases learning attraction and fosters a positive learning disposition, which is a vital success ingredient in acquiring further skills. In addition, increased attention toward minigames is more than just interesting and engaging; it has implications for chess lessons and social integration. Sustaining strategies, such as minigames, could result in more spirited chess communities since passive players are transformed into active participants in championships, clubs, and discussion forums. However, limitations exist. The players that were targeted were new. Therefore, the results may not be transferable to experienced players and different population groups. Future studies could continue with the extensive effects on different kinds of populations. As such, learner characteristics were again disregarded; future studies could look into enhancing engagement through minigame design based on learner trait dimensions. Moreover, combining fundamentally different methods, such as interviews, may shed light on players' experiences in minigames. The abovementioned analysis demonstrated that implementing minigames has significantly impacted the attraction of new players compared to conventional approaches. As the aims of the study are crucial, the following research problem will be solved in this report: analyzing the impact of using minigames in chess education on new players' interest and engagement compared to using the traditional teaching approach. We will discuss the implications of the result for the increase in players' engagement in chess learning. While ranking new players, most revealed increased interest levels whenever they encountered minigames. Concerning the level of interest in the lesson, the experimental group, which used a system that contained minigames, outperformed the control group that received conventional instruction. The observation is true when viewed from the lens of existing research literature. Because of the interaction between the learner and the computer, as e.g. seen with minigames, the approach can be considered fun and exploratory, unlike traditional methods used in teaching. This way, goals are clear and help inexperienced players gain confidence and experience after each match, although chess seems complex. Dividing knowledge into small portions based on the tasks makes chess more enjoyable and spurs the desire to learn. Another factor is new and unconventional approaches to

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Acknowledgments: *The authors thank the editors and anonymous reviewers for their constructive feedback.*

Funding: *This study was not supported by internal or external funding sources. All research presented in the article was conducted at the expense of the author(s).*

Availability of data and materials: *All supporting data generated or analyzed for this study are available upon request.*

Ethics approval and consent to participate: *Not applicable.*

Consent for publication*: Not applicable.*

***Competing interests**: The authors declare that they have no competing interests.*

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Received: 14/09/ 2024
Accepted: 15/11/ 2024