

USING CHESS AS AN INSTRUCTIONAL TOOL: TEACHERS' EXPERIENCES AND CHALLENGES^{**}

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Abstract

The integration of chess into education is increasingly recognized for its potential to enhance student learning outcomes and foster critical thinking skills. This study explored the experiences and challenges faced by teachers in implementing chess as an instructional tool across multiple school districts in a southern U.S. state. A survey involving 62 teachers investigated their methods for teaching chess, their perceived impact on their teaching practices, and their influence on students' learning outcomes and classroom experiences. Results revealed that most teachers embraced chess as an engaging and effective pedagogical strategy, noting improvements in students' problem-solving abilities, focus, and engagement. Despite its positive reception, the study also identified challenges related to teachers' limited instructional time, which constrained their ability to fully integrate chess into their curricula. The findings underscore the potential of chess as a transformative educational tool and call for strategic planning to overcome implementation barriers.

Keywords: chess in education, pedagogical tools, student learning outcomes, critical thinking, teacher experiences, instructional challenges, problem-solving skills, classroom engagement, educational strategies, curriculum integration.

INTRODUCTION

The game of chess has been linked with intelligence, higher-order thinking, and improved student learning outcomes. For these reasons, among many others, several countries, including the United Kingdom, Spain, Turkey, Germany, Italy, Venezuela, Armenia, and Hungary, have chess programs in their schools (Sala & Gobet, 2016; Gobet, 2018). While some studies, such as those by

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Ferguson (1986) and Aciego et al. (2012), have suggested that chess is associated with improved academic outcomes, others, like the work of Gardiner et al. (2019) and Jerrim et al. (2018), present a more nuanced view, indicating that when positive impacts exist, they tend to be small. Sala and Gobet (2016), in their meta-analysis of 24 studies, found only minuscule advantages of chess in mathematics, reading, and cognitive skills compared to control groups.

Educator perceptions provide a critical perspective on this issue. It is essential to look at the perspectives of diverse stakeholders to evaluate any educational intervention more effectively. Educators involved in chess programs have observed improvements in students' confidence, concentration, and critical thinking, associating these skills with academic achievement (Jerrim et al., 2016; 2018). However, the literature also reflects an apparent gap between these perceived benefits and measured academic improvements (Chitiyo et al., 2020).

This study seeks to address the need for an evaluative look at the experiences and challenges teachers face using chess in educational settings. By drawing on existing literature and teacher perceptions from studies like those conducted by Jerrim et al. (2018) and Gardiner et al. (2019), this study aims to assess the practical difficulties of implementing chess in classrooms. Understanding teachers' experiences and challenges is essential, as their practical insights can reveal potential hindrances to the effective implementation of chess in educational settings. By examining these challenges, this study can help identify necessary supports and resources to ensure that chess is used to maximize its educational benefits. This study will contribute to understanding how chess can be optimally used to support educational outcomes, considering the mixed evidence of its benefits and the nuanced experiences of educators in the field.

BACKGROUND TO THE RESEARCH PROBLEM

Volunteer teachers from various grade levels across the state underwent training before the start of the school year in 2018 to equip them with the skills necessary for both learning to play chess and integrating chess into classroom activities as a tool to teach curriculum standards, enhance critical thinking, and bolster 21st-century skills. Teachers were encouraged to incorporate chess or chess-themed lessons for 1-2 hours weekly and initiate after-school chess clubs. The four-day training provided an in-depth introduction to chess, focusing on the following:

- The basic movements of chess pieces are facilitated through an online chess playing and tutoring platform;

- The creation of lesson plans that leverage chess to cover various curriculum topics;
- The application of chess to teach literacy, mathematics, critical thinking, and life skills, highlighting the game's relevance to curriculum connections.

The purpose of integrating chess into the curriculum was to facilitate the development of higher-order thinking skills among students, which would help with problem-solving and goal achievement in school and life. The integration connected academic lessons to chess using simple teaching tools like vocabulary words, comparisons, and manipulatives like chess pieces. For instance, chess boards were used to teach map coordinates or math concepts like multiplication and fractions, while chess puzzles helped students think through problems and make better decisions. The overarching goal of integrating chess into educational practices was to extend the disciplined thinking characteristic of chess to academic subjects, thereby enhancing students' ability to apply these critical thinking skills across various domains.

METHODS AND METHODOLOGY

The study's participants comprised 62 teachers, of whom 74% were female and 23% were male. These educators spanned multiple grade levels and represented 90% of the intervention program's participants. The teachers' experience with chess varied: 40% had been utilizing chess for less than a year, another 40% for one to two years, and the remaining 20% for three years or more. Grade levels taught ranged from 2nd grade to 8th grade, with some educators teaching more than one grade level. Due to the voluntary nature of the participants in the Chess in Schools (CIS) program and survey, the generalizability of this study is limited. While no inferences to the broader population are made, important lessons can still be drawn from these teachers' experiences. The findings should be interpreted with caution and used for descriptive purposes. However, this study lays the groundwork for future research that could explore the applicability of these results to different educational settings or broader populations.

SURVEY INSTRUMENT, ADMINISTRATION, AND DATA ANALYSIS

The survey used to collect data on teachers' perceptions regarding the use of chess in instruction was developed collaboratively with stakeholders from the CIS program, including program coordinators and university faculty with expertise in survey methodology. The development process was iterative, with several drafts reviewed by the entire team to ensure the

survey's clarity and comprehensiveness. The survey included closed-ended and open-ended questions to gather both quantitative and qualitative data. Likert scale items assessed factors such as the ease of integrating chess into lesson plans (e.g., "I find it easy to incorporate chess during classroom instruction") and the impact of chess on instructional delivery (e.g., "Since I started using chess during classroom instruction, chess playing has impacted my instructional delivery"). Additionally, open-ended questions allowed teachers to express their own words, the challenges they faced and their personal experiences. Data collection was conducted through the online Qualtrics platform at the end of the Spring 2018 term.

Likert scale data were analyzed using descriptive statistics, including top-2 box scores, which summarize the highest two response options. Diagram 1 presents these results. Qualitative data were analyzed using thematic analysis to identify key themes related to teachers' challenges and benefits in using chess.

RESULTS

Diagram 1 shows teachers' responses to three statements about their experience using chess in classroom instruction after a full academic year. For the statement, *"The demands of chess playing during classroom instruction are worth the benefits I see in my students,"* a majority (91%) of teachers agreed (somewhat or strongly), suggesting a high level of perceived value in incorporating chess into classroom instruction. A small percentage of the respondents (9%) were neutral. None of the respondents disagreed, indicating a consensus on the presumed positive impact of chess in their teaching practice. For the statement, *"I find it easy to incorporate chess during classroom instruction,"* a majority (78%) of the teachers indicated that chess can be integrated into classroom instruction with relative ease. About a quarter (23%) of the teachers were neutral. A small proportion (5%) indicated difficulties incorporating chess into instruction. For the statement *"I find it easy to modify my lesson plans to include chess time,"* 66% of respondents found it easy to some degree, with 48% "somewhat agree" and 18% "strongly agree" responses. About a third of the teachers (34%) disagreed with the statement.

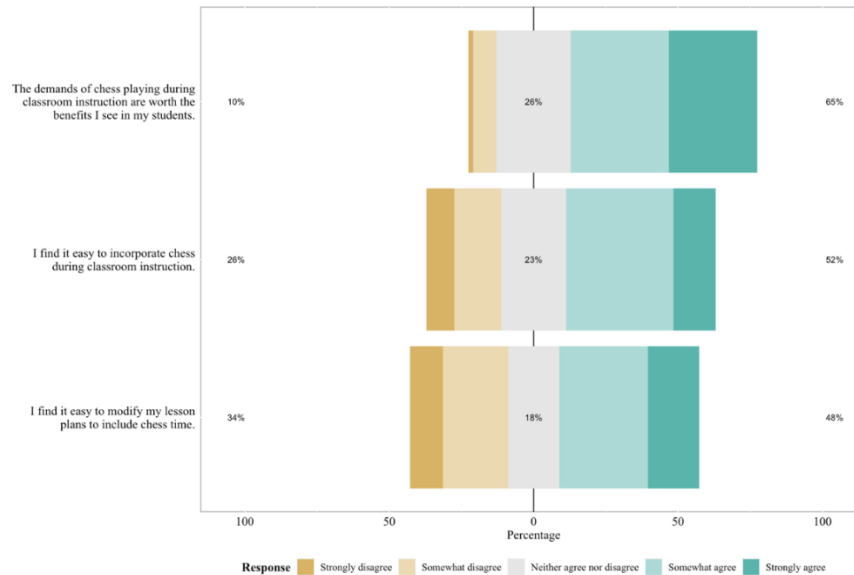


Diagram 1. Teachers' Perceptions Regarding Using Chess in Instruction

The teachers were also asked about how chess impacted their instructional delivery. Diagram 2 shows the percentages of teachers' responses to the statement: "Since I started using chess during classroom instruction, chess playing has impacted my instructional delivery." About 39% of teachers reported that their instructional delivery had not changed since they started using chess. A small percentage (6%) reported a negative impact. Over half (55%) of teachers indicated that chess positively impacted their instructional delivery.

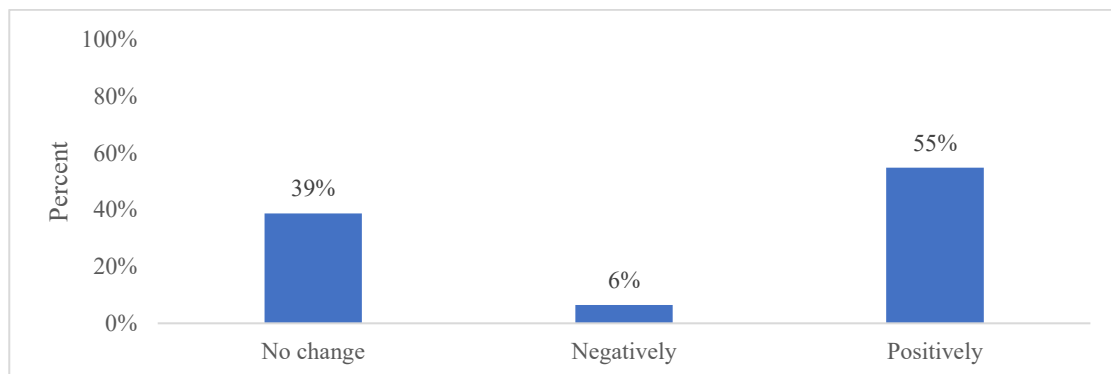


Diagram 2. How Chess Impacted Teachers' Instructional Delivery

The results indicate a positive response to using chess in classroom instruction. Most teachers agree that the demands are worthwhile and that incorporating chess into teaching and lesson

planning is manageable.

Teachers' Experiences Expressed in Their Own Words

The teachers were also asked to express in their own words their experiences teaching chess, how the game had impacted their instructional delivery, and generally, to describe their experiences using the game in their instruction. The findings are organized under three relevant themes.

Positive Academic and Behavioural Outcomes

The findings showed that teachers perceived chess as a valuable tool for enhancing students' problem-solving and strategic thinking skills. Expressly, the educators indicated that students became "*better problem solvers*" with a more structured thinking approach, as chess required them to be more logical and to anticipate outcomes. Additionally, teachers reported observed improvements in students' behaviour, possibly suggesting that the discipline and focus required in chess might translate to a more orderly and engaged classroom environment.

Instructional Challenges and Adaptations

Teachers indicated that incorporating chess into regular classroom instruction presented several challenges. Some teachers felt they lacked sufficient understanding to teach chess effectively, as they "*didn't understand it enough to teach to fidelity.*" Time constraints were also a significant concern, with statements like "*I found it very difficult to play during instruction time,*" highlighting the struggle to fit chess into their already busy schedules. Moreover, the stress associated with balancing chess with academic catch-up efforts suggested that while the game is valued for its educational potential, it is not always practical to implement, given other pressing academic priorities.

Teacher and Student Experiences

Teachers cited chess's motivational benefits and potential to make lessons more engaging. The teachers indicated that chess served as a reward and was eagerly anticipated by students, who were more motivated to complete their work when chess was involved. Chess also appeared to impact teaching styles; teachers reported being more patient and purposeful.

DISCUSSION

The results indicate a generally positive response to incorporating chess in classroom instruction, with most teachers finding it beneficial and manageable. However, the data also point to some challenges when fitting chess into an already packed curriculum, especially for teachers who

are not proficient in chess or struggle with time constraints. These findings, consistent with Chitiyo et al. (2020) and Sagmeister et al. (2022), suggest that while chess is perceived as a valuable educational tool, additional resources and training may be needed to ensure its effective integration. In the words of Sagmeister et al., “Games-cleverly integrated into lessons offer great potential for teaching mathematical skills at primary level, but only if teachers themselves acquire a deep understanding of using games for educational purposes” (p. 1).

The thematic analysis of the qualitative data highlights the potential benefits and practical difficulties of using chess in classrooms. Teachers' accounts of enhanced student problem-solving and behavioural improvements align with the quantitative results, showing strong agreement on the positive benefits of chess (e.g., Gardiner et al., 2019). However, the challenges reported, such as time constraints and a lack of understanding of chess, underscore the importance of providing teachers with ongoing support and professional development.

The mixed results on the impact of chess on instructional delivery, with a significant portion of teachers reporting no change, suggest that while chess can be an effective teaching tool for some, it may not suit all instructional environments without further adaptation. This is consistent with the findings of Sala and Gobet (2016), who found moderate benefits associated with chess, both cognitive and academic. Sala and Gobet also noted that the benefits tended to be positively correlated with the duration and intensity of exposure to the game. This probably calls for more tailored approaches to implementing chess programs in schools, considering different educational contexts' specific needs and limitations.

This study offers an innovative perspective by focusing on teachers' real-world experiences and challenges in integrating chess into instruction. Using mixed methods provides practical insights into how educators adapt to new instructional tools, enhancing the understanding of teacher-driven educational innovation. Overall, the study highlights the promise and the challenges of using chess as an instructional tool. Future research could explore strategies to better support teachers in overcoming these challenges and assess how chess can be adapted to various educational settings for broader applicability. The study's limitations include using a convenience sample, which reduces the ability to apply the findings to a broader population. Additionally, since the data were self-reported, there is a possibility of bias or inaccuracies in the responses.

CONCLUSION AND FINDINGS

The study's findings underscore the presumed benefits and actual challenges of using chess as an instructional tool, as reported by teachers. Educators highlighted that chess can promote positive academic and behavioural outcomes among students, yet integrating it into classroom instruction presents some challenges. Most teachers noted a positive impact on their instructional delivery, illustrating the potential of chess to enrich educational experiences. Some educators expressed the need for additional support and resources to harness the benefits of chess fully. Overall, the study highlights the importance of addressing practical classroom challenges and providing adequate training to optimize the use of chess in educational settings, ensuring that its integration is both practical and meaningful.

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