

Play to Resolve: Educational Games as a Pathway to Conflict Resolution for Early Learners

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ARTICLE INFO

Keywords:

educational games;
conflict resolution skills;
early childhood education;
primary school;
social and emotional
development

Article history:

Received 2024-06-18

Revised 2024-07-26

Accepted 2024-07-31

ABSTRACT

This study explores the role of educational games in developing conflict resolution skills among children aged 6 to 8, a critical period for social and emotional development. Utilizing a qualitative research design and an exploratory case study approach, the research was conducted in two educational institutions in X, Indonesia, involving 60 children from diverse socioeconomic backgrounds. This diversity provided insights into how educational games affect children with varying levels of social experience and resource access. Data collection methods included observations, semi-structured interviews, and document analysis. Findings indicate that educational games significantly enhance conflict resolution skills by improving communication, empathy, teamwork, and self-regulation. Children demonstrated increased impulse control and thoughtful responses during game-related conflicts, as reported by teachers and parents. These improvements align with Vygotsky's theory of social development, highlighting the importance of structured play in cognitive and social growth. The study concludes that educational games offer a dynamic platform for practicing conflict resolution, thereby fostering children's social and emotional development. Recommendations for educators include integrating a variety of cooperative and role-playing games into curricula and conducting regular debriefing sessions to reinforce learning. This research underscores the broad applicability of educational games in diverse contexts, supporting their integration into educational settings to equip children with essential life skills.

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1. INTRODUCTION

In today's interconnected world, conflict resolution skills are crucial for the social and emotional development of young children. These skills enable children to interact effectively with their peers, navigate diverse social situations, and develop essential problem-solving abilities that are vital for their future academic and personal success. Early development of these skills is essential for nurturing healthy social relationships and fostering lifelong competencies in communication, empathy, and teamwork. Empathy, a key component in socioemotional development, significantly contributes to children's social adjustment, prosocial behavior, and emotional understanding (Simon & Nader-Grosbois, 2021). A

deficiency in empathy can indicate severe conduct disorders and hinder the development of prosocial emotions (Kimonis et al., 2023). Empathy, which involves sharing and understanding the emotions of others, is crucial for children's socioemotional adjustment and the development of harmonious interpersonal relationships.

Parental practices are critical in fostering affective empathy in children, which refers to the ability to respond with an appropriate emotion to another's mental state. Cognitive empathy, on the other hand, typically begins to develop around the age of four and involves understanding another's perspective or mental state (Pashevich, 2022). Additionally, the way parents handle conflicts, such as marital conflicts, and their conflict resolution strategies can significantly impact children's socioemotional skills and outcomes (Gong et al., 2023). The quality of the student-teacher relationship also has a substantial influence on children's empathy, interpersonal communication, academic achievement, and psychosocial adjustment (Xiang et al., 2022).

It is essential to consider the impact of technology on the development of empathy in children. There are concerns that technology-saturated environments, including computer games, may hinder the development of empathic behavior and social skills in children (Xiang et al., 2022). However, educational games have emerged as a promising tool for developing these essential skills. These games can offer structured play environments that facilitate the development of empathy through interactive and immersive experiences.

Furthermore, interventions focusing on improving empathy and related abilities, such as systemizing, are crucial for children's development and should be integrated into community programs (Lasmono et al., 2021). Research has shown that educational games designed with these goals in mind can significantly enhance children's socioemotional skills, providing a dynamic and engaging way to foster both cognitive and affective empathy.

Educational games are increasingly recognized as powerful tools for enhancing children's learning experiences by improving their cognitive and social skills. According to Vygotsky's theory of social development, play is crucial for learning as it facilitates social interactions that promote cognitive growth (Vanbecelaere et al., 2020). Research by Johnson and Johnson (2009) supports this notion, showing that educational games can enhance children's communication, empathy, and cooperative behaviors. A study by Mahfuzhoh and Marcillia (2024) reported a 20% improvement in teamwork skills among children who regularly engaged in these games. Furthermore, studies have demonstrated that learning through play can effectively support students' learning processes (Savira et al., 2021). For instance, puzzles have been shown to enhance cognitive development in children aged 4-6 years (Mulyana & Nurcahyani, 2022), while traditional games can foster children's education and creativity (Sulaiman & Samsudin, 2022).

Moreover, the benefits of educational games extend to enhancing children's mindset and cognitive abilities. Cognitive training has been linked to promoting a growth mindset in children through the plasticity of cortico-striatal circuits, leading to improved cognitive control, motivation, and memory (Chen et al., 2022). Additionally, the belief in a growth mindset has been associated with enhanced working memory performance in children, ultimately improving academic outcomes (Zhao et al., 2022). These findings underscore the importance of incorporating play-based learning approaches to promote holistic child development. In conclusion, educational games play a vital role in children's development by fostering cognitive growth, social skills, and a positive mindset. By leveraging play-based learning approaches, educators and parents can create engaging environments that support children's holistic development.

Despite the recognized benefits of educational games, there is limited research on their specific impact on conflict resolution skills among young children. This study aims to fill this gap by exploring how educational games can build conflict resolution skills in children aged 6 in early childhood education (PAUD) and children aged 7-8 in the first and second grades of primary school. While previous research has highlighted the potential of educational games to enhance various skills such as cognitive abilities, problem-solving, creativity, and understanding complex concepts (Istiono, 2021; Manesis, 2020; Rakimahwati et al., 2022)), our study is distinctive in its focused investigation on conflict resolution.

What sets this study apart is its emphasis on conflict resolution skills, which are critical for children's social and emotional development but have not been extensively studied in the context of educational games. By employing a qualitative research design and an exploratory case study approach, this research provides a nuanced understanding of how structured play through educational games can enhance children's abilities to manage and resolve conflicts.

Our investigation not only examines the general benefits of educational games in stimulating critical thinking and concentration (Rakimahwati et al., 2022). but also delves into specific strategies and interactions that foster negotiation, empathy, and teamwork among young learners. This targeted focus on conflict resolution skills positions our study to make a significant contribution to the field by providing empirical evidence and practical recommendations for educators and policymakers aiming to integrate conflict resolution training into early childhood education through the use of educational games.

Research has shown that games can scaffold learning through feedback, gradually introduce challenging content, and promote skills mastery through repetition and practice (Vasalou et al., 2021). Serious games, a category of games designed for educational purposes, have been effective in teaching abstract concepts, improving communication, and enhancing conflict resolution skills (Poděbradská et al., 2020). Additionally, digital educational games have been found to support active participation and motivation among children, contributing to their overall learning experience (Derya, 2020). Furthermore, educational games have been linked to improvements in various skills, including fine motor development, emotional recognition, and social-emotional skills (Löytömäki et al., 2024). These games can also foster the development of critical skills such as creativity, problem-solving, collaboration, and critical thinking, which are crucial for academic success and 21st-century skill development (Kavak, 2022). In conclusion, educational games play a significant role in enhancing children's learning experiences and skill development. They offer a dynamic and engaging platform for children to acquire and practice essential skills, including conflict resolution skills. By leveraging the interactive and stimulating nature of games, educators can effectively support children's cognitive, emotional, and social development in early childhood education settings.

This study seeks to answer the primary question: "How do educational games develop conflict resolution skills in children aged 6 to 8?" To address this gap in the research, the specific objectives of the study are:

1. To analyze the impact of educational games on conflict resolution skills in children aged 6 to 8.
2. To examine the effectiveness of different types of educational games in fostering these skills.
3. To provide practical recommendations for educators on integrating effective educational games into the curriculum.

This research is anticipated to offer both theoretical and practical contributions. Theoretically, it will enrich the existing literature by providing empirical evidence on the role of educational games in developing children's social and emotional skills, specifically focusing on conflict resolution. This contribution will help fill the gap in current research and offer a deeper understanding of how structured play can enhance these critical skills.

Practically, the study will deliver actionable recommendations for educators and parents on utilizing educational games to enhance conflict resolution skills. These recommendations will include specific strategies and examples of effective games, making it easier for educators to implement them in various educational settings. Moreover, the findings can guide policymakers in crafting educational programs and policies that support children's social and emotional development, ensuring that educational games are integrated into curricula to foster the holistic development of young learners.

2. METHODS

2.1. Research Design

This study employs a qualitative research design utilizing an exploratory case study approach to gain an in-depth understanding of the role of educational games in developing conflict resolution skills

among children. Educational games have been increasingly recognized for their potential in fostering various skills among children, including conflict resolution. By employing this research design, researchers aim to delve deeply into the experiences and interactions of children within their real-life contexts to understand the intricate relationship between educational games and conflict resolution (Cao et al., 2023)

2.2. Participant

The participants in this study included 60 children divided into two groups: 30 children aged 6 from early childhood education (PAUD) and 30 children aged 7-8 from the first and second grades of primary school. The sample included an equal number of boys and girls from diverse socioeconomic backgrounds. Participants were selected using purposive sampling to ensure sufficient exposure to educational games.

Purposive sampling criteria were carefully chosen to ensure the reliability and validity of the study results. The inclusion criteria focused on:

- a. Regular attendance at educational institutions: This criterion ensured that children were consistently engaged in the learning environment and had regular access to educational games, which is crucial for observing the impact of these games over time.
- b. Active participation in educational games: This ensured that participants had sufficient interaction with the games to allow for meaningful observations and data collection regarding their conflict resolution skills.
- c. Parental consent: Obtaining parental consent was necessary to comply with ethical standards and to ensure parents were aware and supportive of their children's participation in the study.

Children with severe behavioral issues or special educational needs were excluded to maintain consistency and control for external variables that could affect the study's outcomes. This exclusion criterion aimed to create a more uniform sample, allowing for clearer interpretation of how educational games impact conflict resolution skills among typically developing children (Papadakis et al., 2020).

2.3. Research Setting

The study was conducted in two educational institutions in the city of X, Indonesia, to provide a diverse sample of children at different early education stages.

- a. Institution 1: This was a private early childhood education center located in the central part of the city. The center serves approximately 150 children from various socioeconomic backgrounds and has a dedicated educational games program that is integrated into daily activities. The institution is known for its innovative approach to early childhood education, emphasizing interactive and play-based learning.
- b. Institution 2: This was a public primary school situated in a suburban area of the city. The school has an enrollment of about 500 students and integrates educational games into its curriculum for first and second graders. The student population is diverse, reflecting a wide range of socioeconomic statuses. The school aims to incorporate modern educational tools to enhance learning experiences and improve student engagement.

This approach allowed for a comprehensive examination of the impact of educational games on children's learning experiences at various educational levels (Deng et al., 2020). By selecting institutions with different educational settings and demographic profiles, the study aimed to capture a broad spectrum of experiences and outcomes related to the use of educational games.

2.4. Research Procedure

The data collection process was carried out over a six-month period from July to December 2023. Key activities included initial ethical approval in July, preliminary meetings with teachers in July, systematic observations from August to December, and semi-structured interviews from September to

December. Observations of children's interactions during educational games were conducted twice a week, focusing on behaviors related to conflict resolution. Observations were guided by a structured observation sheet that included categories for communication, negotiation, and resolution outcomes (Ntawihha et al., 2022).

2.5. Data Collection Procedure

Data were collected through observations, semi-structured interviews, and document analysis to investigate children's conflict resolution skills and peer interactions. Observations focused on how children interacted with peers, approached conflict situations, and employed strategies to resolve conflicts (Tenenbaum et al., 2020). Semi-structured interviews with teachers and parents provided additional insights into their perspectives on changes in children's conflict resolution skills (Tenenbaum et al., 2020). Document analysis included reviewing teachers' daily logs, children's progress reports, and samples of children's work such as drawings and written reflections.

2.6. Data Analysis

The collected data were analyzed using qualitative techniques including coding, categorization, and thematic analysis. The analysis process was conducted in several stages to ensure thoroughness and consistency:

- a. **Initial Coding:** Raw data from observations, interviews, and document analysis were imported into NVivo software (Dhakal, 2022). Initial codes were generated by reading through the data multiple times to identify key elements related to conflict resolution behaviors and interactions during educational games. Each segment of data that referred to a specific behavior, interaction, or outcome was labeled with a code. For example, codes such as "negotiation," "empathy," "teamwork," and "self-regulation" were used to categorize specific behaviors observed during the games.
- b. **Development of Codes:** The initial codes were then reviewed and refined. This involved grouping similar codes together and identifying patterns or recurring themes. For instance, codes related to communication strategies were grouped under a broader theme of "effective communication." This step was iterative, with the research team discussing and revising the codes to ensure they accurately captured the data.
- c. **Categorization and Thematic Analysis:** The refined codes were organized into broader themes. This process involved categorizing the codes into overarching themes that represented the main findings of the study. Themes such as "enhancement of conflict resolution skills," "role of educational games in fostering empathy," and "development of teamwork through games" were identified.
- d. **Validation of Themes:** To ensure the reliability and validity of the themes, several steps were taken:
 - 1) **Member Checking:** Participants were asked to review the themes to verify that they accurately reflected their experiences and observations. Feedback from participants was incorporated into the final themes.
 - 2) **Peer Debriefing:** The research team engaged in peer debriefing sessions where they presented the themes and discussed their interpretations. This helped to refine the themes further and ensure that they were grounded in the data.
- e. **Interpretation of Findings:** The final themes were interpreted in the context of existing literature and Vygotsky's theoretical framework. This provided a comprehensive understanding of the findings, linking them to broader theories of social development and the role of structured play in learning.

2.7. Ethical Consideration

Ethical considerations were meticulously adhered to throughout the study following the guidelines of the American Psychological Association (APA). Specific measures included obtaining ethical approval from the institutional review board, securing informed consent from parents or guardians, maintaining participants' confidentiality by assigning pseudonyms, and ensuring that all data were stored securely. Additionally, the study ensured that children could withdraw from participation at any time without any consequences (Broekstra et al., 2021).

3. FINDINGS AND DISCUSSION

3.1. Findings

3.1.1 Identifying and Analyzing the Role of Educational Games in Developing Conflict Resolution Skills

The data collected through observations, interviews, and document analysis revealed that educational games significantly contributed to developing conflict resolution skills among children.

Structured observation sheets documented a 30% increase in instances where children used negotiation strategies to resolve conflicts. The 30% increase was calculated by comparing the number of conflict resolution instances during the initial observation period (baseline) with the number of instances observed after implementing educational games (Table 1). These observations were compared to a baseline established during the initial phase of the study, where children were observed without the integration of educational games. During observations, children frequently encountered conflict situations such as disagreements over game rules and turn-taking. For example, one child expressed, "I don't want to play if I can't be the leader," a common conflict scenario observed. This statement was followed by another child suggesting, "Let's take turns being the leader," demonstrating the use of negotiation as a conflict resolution strategy.

Table 1. Increase in Conflict Resolution Strategy Usage Among Children

Conflict Resolution Strategy	Baseline Instances	Instances After Implementation	Percentage Increase
Negotiation	20	26	30%
Teacher Assistance	15	19	27%
Verbal Communication	30	39	30%
Non-Verbal Communication	35	45	29%

Structured observation sheets documented that children employed various conflict resolution strategies, including negotiation: "Let's take turns being the leader"; seeking help from teachers: "Can you help us decide who should go first?"; verbal communication: "Can we try it my way next time?"; and non-verbal communication: Gesturing to indicate taking turns. These strategies were effective in resolving conflicts in 80% of observed instances. The 80% effectiveness rate was determined by the proportion of observed conflict instances that were resolved using the identified strategies (Table 2).

Table 2. Effectiveness of Conflict Resolution Strategies

Effectiveness of Strategies	Total Conflict Instances	Resolved Instances	Effectiveness Rate
All Strategies	50	40	80%

Interviews with teachers and parents provided qualitative insights supporting the observational data. Teachers reported that children became more adept at using verbal and non-verbal communication

to resolve disputes. For instance, one teacher noted, "I've seen a noticeable improvement in how children handle disagreements. They are more willing to talk things out and find a fair solution."

3.1.2 Exploring How Various Types of Educational Games Facilitate the Development of Conflict Resolution Skills

The analysis of different types of educational games revealed that specific characteristics contributed uniquely to the development of conflict resolution skills. Cooperative games, such as "Team Treasure Hunt," required children to work together to find hidden items, promoting communication and resource sharing. Role-playing games, like "Conflict Role-Play," allowed children to enact scenarios such as "playing fair" and "sharing toys," helping them practice and understand conflict resolution strategies. These games encouraged children to communicate, share resources, and support each other, fostering a sense of empathy and mutual respect.

Empirical data and observations indicated a 25% increase in empathetic behaviors, such as offering help to peers, and a 35% increase in cooperative behaviors, such as sharing game resources. These percentages were calculated by comparing the frequency of these behaviors before and after the implementation of the educational games. Table 3 below presents the data on the increase in empathetic and cooperative behaviors. Initially, 20 instances of empathetic behavior and this number increased to 25 after the implementation of the games. Similarly, cooperative behaviors were observed to increase from 20 to 27 instances, resulting in a 35% increase. This was calculated using the same formula.

Table 3. Increase in Empathetic and Cooperative Behaviors Among Children

Behavior Type	Baseline Instances	Instances After Implementation	Percentage Increase
Empathetic Behaviors	20	25	25%
Cooperative Behaviors	20	27	35%

3.1.3 Providing Recommendations for Educators on Designing and Implementing Effective Educational Games

Based on the findings, the following recommendations can be made for educators. First, it is essential to incorporate a mix of cooperative and role-playing games to address different aspects of conflict resolution. For instance, cooperative games like "Team Treasure Hunt" can be used to promote teamwork, while role-playing games like "Conflict Role-Play" can help children practice negotiation strategies.

Additionally, creating a supportive classroom environment is crucial. Establishing an atmosphere where children feel safe to express their feelings and experiment with conflict resolution strategies can be achieved by setting clear guidelines for respectful communication and providing positive reinforcement. This supportive environment encourages children to engage more openly and confidently in conflict resolution practices.

Regular debriefing sessions after games can also be highly beneficial. These sessions allow children to reflect on their experiences and learn from both successes and mistakes. Guided questions such as "What worked well?" and "What could we do differently next time?" can help facilitate meaningful discussions and reinforce the lessons learned during the games.

Involving parents in the process is another important recommendation. Educators should provide parents with information on the games and strategies being used so they can reinforce these skills at home. This could include sending home summaries of game activities and suggestions for at-home games, ensuring that the development of conflict resolution skills continues beyond the classroom.

Overall, the findings underscore the significant role that educational games play in developing conflict resolution skills among young children. Through structured observations, interviews, and document analysis, it was evident that educational games enhanced children's communication, empathy,

teamwork, and self-regulation. These skills not only manifested during the games but also transferred to other social interactions in both the classroom and at home.

3.2. Discussion

This study reveals that educational games significantly enhance conflict resolution skills among young children by improving their communication, empathy, teamwork, and self-regulation (Dell'Aquila et al., 2022). These findings align with Vygotsky's theory of social development, which posits that social interaction is crucial for cognitive growth (Luong, 2022). Vygotsky asserts that structured play, such as that found in educational games, enables children to engage in meaningful social interactions that promote both social and cognitive development (Luong, 2022). The observed improvements in conflict resolution skills through educational games exemplify how such structured play facilitates these developmental processes.

Effective communication is essential for conflict resolution among children, enabling them to express their needs, listen to others, and negotiate solutions (Gong et al., 2023). Observations have shown that children engaging in negotiating game rules and turn-taking can enhance mutual understanding and facilitate conflict resolution. For example, children suggesting taking turns to resolve disputes over leadership roles in games demonstrate the application of negotiation skills (Gong et al., 2023). Educators should integrate games like "Team Treasure Hunt" and "Conflict Role-Play" into their curricula, as these games specifically target and improve communication and conflict resolution abilities (Gong et al., 2023). Moreover, negotiation involves strategies such as active listening, turn-taking, and suggesting constructive resolutions, playing a vital role in peaceful conflict resolution by allowing parties to communicate directly and seek mutual agreements (Inayatullah et al., 2022; Rogers et al., 2020).

Empathy development through educational games has been recognized as crucial for fostering the understanding and sharing of emotions among children. Role-playing activities within these games have significantly enhanced empathetic behaviors, such as offering help and mediating disputes among peers (Ma et al., 2021). For example, children demonstrated empathy during role-playing games by helping peers who were upset and suggesting fair solutions to conflicts. This empathetic understanding is essential for resolving conflicts in a way that considers the feelings and needs of all parties involved. Technological advancements in educational games, particularly digital role-playing games, have supported diverse educational scenarios and promoted empathy through immersive experiences (Bowman & Baird, 2022). These immersive and experiential simulations have been found to be highly effective in promoting empathy, especially in contexts like nursing education (Muravevskaia & Gardner-McCune, 2022).

Collaborative games like "Team Treasure Hunt" have been observed to significantly enhance children's cooperative behaviors, leading to a 35% increase in actions such as sharing resources and supporting teammates. These interactions not only promote problem-solving and critical thinking skills but also help children negotiate roles, share resources, and find collective solutions to challenges (López-Faican & Jaen, 2021). Such experiences are crucial as they teach children the importance of working together towards common goals, fostering their ability to collaborate effectively, which is a vital social skill that enhances conflict resolution capabilities in a constructive manner.

The development of self-regulation skills observed in the study participants underscores the multifaceted benefits of educational games, which enhance impulse control and thoughtful responses during conflicts, leading to improved calmness and problem-solving abilities in social interactions (Robson et al., 2020). These skills were measured through teacher and parent reports, highlighting increased self-regulation in various social settings. Engaging in structured yet flexible educational games provide children with repeated practice in self-regulation as they navigate game rules and respond to dynamic social interactions (Healey et al., 2022). Research indicates that children with high self-regulation skills exhibit better social competence and are less likely to engage in negative behaviors (Çetin). Integrating self-regulation learning theory into educational games helps maintain and enhance users' learning motivation, contributing to skill development (Jiang & Shangquan, 2022). Furthermore,

educational games positively impact self-concept, self-esteem, and social skills in children (Cámara-Martínez et al., 2023). Programs like ENGAGE have successfully taught self-regulation skills to children, resulting in significant, sustained improvements (Healey et al., 2022).

This study contributes to the existing literature by providing empirical evidence on the effectiveness of educational games in developing conflict resolution skills among young children. Unlike previous research that broadly examined the benefits of educational games, this study specifically focuses on conflict resolution, thereby filling a critical gap and extending Vygotsky's theoretical framework to include structured play as a facilitator of social and emotional learning.

The qualitative case study approach used in this research allowed for an in-depth exploration of children's interactions and the nuanced ways in which educational games facilitated conflict resolution. However, the study's findings are based on a relatively small sample from two educational institutions, which may limit the generalizability of the results. Potential biases or confounding factors, such as the specific educational contexts and participant characteristics, should also be considered. Future research could employ a mixed-methods approach or a larger, more diverse sample to validate and extend these findings. Additionally, exploring the long-term effects of educational games on conflict resolution skills through longitudinal studies would provide deeper insights. Research could also investigate the role of digital educational games in conflict resolution, given the increasing use of technology in educational settings.

4. CONCLUSION

This study explored the role of educational games in developing conflict resolution skills among children aged 6 to 8. The findings revealed that educational games significantly enhance children's communication, empathy, teamwork, and self-regulation, which are essential for effective conflict resolution. Based on these findings, it is recommended that educators integrate a diverse range of educational games into early childhood and primary education curricula. Specifically, cooperative games like "Team Treasure Hunt" and role-playing games like "Conflict Role-Play" should be included to target and improve these skills. Involving parents through information sessions, newsletters, and at-home activity suggestions can also reinforce these skills, creating a supportive environment both at school and at home.

Theoretically, this study contributes to the literature on educational games and children's social and emotional development by providing empirical evidence supporting their effectiveness in enhancing conflict resolution skills. This extends Vygotsky's theoretical framework by demonstrating how structured play can facilitate social and emotional learning in educational settings.

However, the study has certain limitations. The relatively small sample size and specific educational settings may limit the generalizability of the findings. Potential biases or confounding factors, such as the educational contexts and participant characteristics, should also be considered. Future research could address these limitations by including a larger, more diverse sample and examining different educational contexts to validate and extend these findings. Longitudinal studies tracking children's development over several years would provide deeper insights into the long-term effects of educational games on conflict resolution skills. Additionally, examining the impact of digital educational games and investigating their effectiveness in various cultural and educational contexts would offer a more comprehensive understanding of their potential benefits.

Acknowledgments: We would like to extend our heartfelt gratitude to Universitas Nadhlatul Ulama Surabaya for their invaluable support in both material and moral aspects throughout the course of this research. Their contributions have been instrumental in the successful completion of this study..

Conflicts of Interest: The authors declare no conflict of interest.

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