



Operationalizing Conflict Strategies in a Board Game

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ABSTRACT

The aim of conflict resolution education is to impart essential strategies and skills for resolving conflicts effectively. While these are important life skills, conflict resolution can be difficult to teach because it requires individuals to interact with others, explore new strategies, and receive feedback within a natural social context in order for strong connections to be made. As board games often involve co-located multiplayer interaction and can be effective tools for young learners, we explore the possibility of incorporating learning about conflict resolution into a tabletop game. We describe the process of designing an educational board game – *StarStruck* – that fosters discussions about conflict management via operationalization of conflict strategies drawn from an instrument founded in social psychology theory. Through in- and out-of-board interactions, *StarStruck* is designed to provide players with affordances to explore different resolution strategies within their natural social environment. We present examples from initial playtesting sessions to consider the expressive range of conflict scenarios generated by playing the game. This work serves as a preliminary illustration of how to map the vocabulary of conflict resolution to game mechanics, dynamics, and aesthetics so that players can naturally engage with and discuss conflict interactions.

CCS CONCEPTS

• **Applied computing** → **Collaborative learning**.

KEYWORDS

conflict modeling, education, social skill learning

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1 INTRODUCTION

Effective conflict resolution education (CRE) fosters the development of crucial social skills necessary for establishing and maintaining healthy relationships, as well as building strong, peaceful communities [4]. Prior work has indicated games can be valuable tools for CRE because they can enable interactive learning through

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exploration of scenarios and their outcomes [1] and can even permit the exploration of different perspectives and values without direct teacher involvement [2]. Tabletop games in particular have several strengths as potential tools for teaching and prompting discussions about conflict resolution. For one, players must engage with others within their natural social environment. There is the possibility of out-of-board interactions (the metagame), which - although difficult to control - could potentially ensure that connections are drawn between the game and real life, and promote the development of critical thinking skills.

In this paper, we present a review of conflict-related vocabulary from social psychology and reflect on how tabletop games and conflict scenarios can intersect, both in existing and well-known games and through an illustrative example of a new board game to support CRE called *StarStruck*. *StarStruck* encourages gameplay interactions that might be used to help teach high school and college students about conflict resolution strategies and allows players to experience different factors involved in the setup, escalation, and resolution of conflicts. Through play, students are thus given opportunities to explore a variety of situational parameters that affect the context, dynamics, and outcomes of strategies that may be used in a conflict scenario.

The contribution of this work includes: (1) a critical analysis and comparison framework centered around the vocabulary of conflict with an illustrative example of two relevant commercial and well-known tabletop games (*Risk* and *Monopoly*), (2) the design of our educational board game as informed by this analysis, and (3) example interactions from gameplay as they relate to conflict resolution strategies. The theoretical foundations of conflict strategies as defined by the Thomas-Kilmann Conflict Mode Instrument (TKI) [5] form the basis for the vocabulary for our analysis. TKI is a well-known tool used to assess the personal conflict strategies used by individuals. According to the TKI model, there are five primary types of conflict strategy styles (refer to Figure 1): collaborating (assertive, cooperative), accommodating (unassertive, cooperative), competing (assertive, uncooperative), avoiding (unassertive, uncooperative), and compromising (moderate assertiveness and cooperativeness). As an established instrument of conflict strategies, the TKI model is well-suited to analyze the strategies encouraged by games, assess strategies employed during play, and generally inform the design of a new educational tabletop game for exploring conflict.

2 ANALYSIS OF RELEVANT BOARD GAMES

In a conflict resolution game, players (who can be divided into one or several groups or “sides”) face a conflict situation together. The conflict is implemented as a scenario with a domain that is appropriate to the interests, maturity, and level of general knowledge of the participants. Examples of domains include a schoolyard [6], a

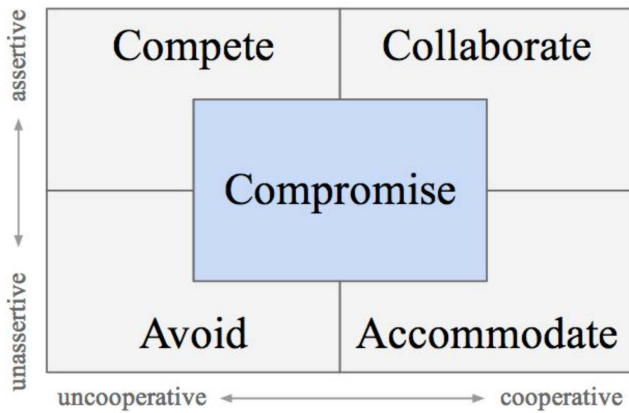


Figure 1: A graphical depiction of the TKI model [5].

company boardroom, a region plagued by inter-ethnic violence, or a nuclear family. Each scenario contains one or more goals which need to be achieved, a number of obstacles, and means of overcoming the obstacles. Participants might only have access to part of the scenario and might be given incomplete information about the other groups' goals and particular obstacles.

Our primary objective in designing Starstruck was to help students and teachers make connections between real-life conflicts and conflict scenarios experienced during a tabletop game. One frequent class of conflict scenarios that occurs in a school context are conflicts related to resources. The nature of these conflicts varies with differences in personalities and the degree of attachment to the resources in question. Many board games deal with resource conflicts, and many others provide player characters with a variety of play personalities. Strategy and chance also play an important part in determining skill of players in recognizing and responding to challenging situations in the game.

Risk and Monopoly are two examples of successful tabletop games that involve resource conflicts and play personalities. This section presents a comparative analysis of the two which is grounded by the Mechanics, Dynamics, and Aesthetics (MDA) theoretical framework [3], which enables us to formally understand games by considering their *mechanics* (components at the level of data representation and algorithms, such as rules and player actions), *dynamics* (the run-time behavior and interactions of the mechanics acting on player inputs) and *aesthetics* (the emotional responses evoked in the player). We will then discuss how this analysis was used to inform our design choices for StarStruck. While many other board games as well as digital games provide similar affordances to Risk and Monopoly, the choice of these games is due to their familiarity among the target population for the project and for making the analysis format accessible to readers. This also indicates that the novelty of StarStruck is not in its mechanics but in the framing of the scenarios and choice of mapping vocabulary in the cards.

2.1 Risk

2.1.1 Mechanics. In Risk, players use military strategy in order to conquer the world. The mechanics incorporated in this game give

rise to the dynamic of territorial acquisition. The board is divided into forty-two territories and six continents. Territories that form a continent are the same color. With each turn, players receive armies based on the number of territories, continents, and value of the set of Risk cards traded in. These armies can be placed in any of the player's territories. This creates a mechanic-based feedback loop where more armies allow for more conquering of territories, and more conquests will award more armies at the start of a turn.

Risk cards are obtained by capturing at least one territory during a turn. Three Risk cards of the same type can be traded in for additional armies at the beginning of the turn. This creates a mechanic of promoting a territory each turn to gain more Risk cards and potentially more armies.

During the game, players may attack adjacent territories as long as two units remain in their conquered territory. When attacking, the attacker and defender both roll dice to see who wins. The attacker can roll up to three dice, one for each attacking unit, and the defender can roll up to two dice if they have at least two units in their territory. Both players roll at the same time and compare who obtained the highest value. The player with the highest die value causes the other player to lose units (and thus lower their number of dice). If more than one die is rolled, players compare the two next highest die. If there is a tie, the defender wins. By removing all units from a territory, the attacking player wins that territory. Conquering all territories in a continent gives the player a bonus number of armies based on the size of the continent every turn. This causes players to both want to conquer and defend continents as well as prevent other players from owning continents. Conquering all territories wins the game.

2.1.2 Dynamics. The element of gaining territories and continents to generate more armies - and thus to conquer more territories - creates the dynamic of territorial acquisition. During the game, alliances may take place, but in the end, there can only be one winner. Since players can place armies on any conquered territory during the beginning of a turn, this increases the ability for attacking and defending territories.

2.1.3 Aesthetics. Risk has two main aesthetics that create an enjoyable gaming experience. These include challenge and discovery. The aesthetics of challenge are created by opponent play. Players compete against each other individually and are challenged by one another. Discovery is produced as players find and conquer new territories. Players discover new strategies and techniques throughout the game due to mechanics related to increasing army numbers such as Risk cards, territories owned, and continents owned.

2.2 Monopoly

2.2.1 Mechanics. Each player starts out with a certain amount of money. Players then roll the dice to travel around the board. If the player lands on a territory, they may buy it if it is unowned or pay rent if it is owned and unmortgaged by another player. By rolling doubles, players get to take another turn. By owning all properties of the same color, a player may choose to place houses or a hotel on those properties to increase the amount other players must pay if they land on them. Players receive \$200 every time they pass Go

(the first square on the board) and if they run out of money, they may mortgage one of their properties.

If a player lands on a square labeled *Chance* or *Community Chest*, they must draw the card associated with the square. Chance and Community Chest cards may force a player to take actions such as paying a fine, receiving money, or moving to another space.

Another mechanic in Monopoly is landing in Jail. This causes a player to not pass Go and remain on the Jail square for up to three turns, unless doubles are rolled before three turns is reached.

At any time, players may negotiate a trade in the metagame. Once players are bankrupt, they are no longer in the game and the last player standing wins.

2.2.2 Dynamics. Monopoly partly is based on territorial acquisition since owning properties is the best way to make other players go bankrupt and lose. A large dynamic of Monopoly, however, is the negotiation that takes place outside of the game. This directly affects gameplay in that trading properties and money can lead to acquisition of all properties of a color and increased rent rates for everyone in the game. This contrasts with Risk where metagame negotiations such as trading cannot occur.

2.2.3 Aesthetics. Monopoly has overall the same main aesthetics as Risk in that challenge is created as players race to gain the most properties and money. Discovery occurs as players buy and manage new properties while finding different strategies to win the game.

3 WHY NOT USE RISK OR MONOPOLY?

Risk and Monopoly both have the aesthetic of challenge, which creates conflict in players. Both of these games, however, allow for only one winner, which eliminates the conflict strategy of collaboration. Risk also involves many rules for players to keep track of, which can cause players to focus more on the rules and less on the gameplay. Monopoly's end conditions can take a long time to achieve, which can cause players to get bored during gameplay. Once properties are owned in Monopoly, they can no longer be taken by someone else unless traded for, which reduces player motivation to use a competitive strategy. Risk does allow territories to be taken, but this can take extensive time and resources, also discouraging competitive strategies. Both Risk and Monopoly do not reliably give players the opportunity to come from behind. Players who are lagging often become bored and lose interest in the game. Since our board game is focused on optimized learning for young students, we needed a game that allowed for players to be fully engaged and competitive throughout the game. Crucially, Monopoly and Risk generally do not have the aesthetics of expression and fellowship. Expression allows for players to try different playing styles, which can create different conflict resolution strategies. Fellowship gives players the opportunity to form alliances and potentially share victory in a game. In Monopoly, trading is focused more on financial gain rather than the people involved and the underlying situation. Similarly, Risk is not a deeply personal game; characters are represented as continents and not individuals.

4 STARSTRUCK: THE GAME

We created a new board game informed by our analysis of Risk and Monopoly, with the central goal of constructing an engaging

resource for teaching resolution skills. Via mechanic-driven design, we hoped to achieve a highly immersive game whereby players could explore their choices without being guided by a specific lesson. The resulting metagame dynamics that arise are crucial for enabling players to learn, make mistakes, and relate their in-game experiences to their own lives.

4.1 MDA Analysis

4.1.1 Mechanics. Players can choose to play as one of five racially-neutral characters, each with a unique ability and personality. Their ultimate goal is to become the most famous rockstar in the world, achieved by accumulating "ego tiles" at the end of the game. These ego tiles are gained through chance and reflect the unique resolution strategies the player used in the game. Players start off with the amount of fans and/or money specified on their player cards. The amount of fans and/or money depends upon the personality of the player card. They also must choose a colored objective card. Each player has a star that must be given to another player by the end of the game, which is good for one extra turn around the Golden Finale Stage. Players spin to determine who goes first and play commences clockwise. Airports can be used to go to international cities for \$300 and strategically-placed shortcut routes allow players to quickly move across the United States. Chance cards can either positively or negatively affect players and are drawn when the spinner lands on that option. If a player completes an objective card, they then draw another objective card of a different color.

On their turn, players receive \$100 and spin to see how many spaces they can move. If players land on a white hexagon surrounding a city and the hexagon is unowned, they now own that hexagon and place their player symbol on the tile. If that space is owned, they may challenge the player who owns it. This occurs by both players rolling a die, similar to the challenge mechanic in Risk. Players can only defend the city if they are currently at that location. The player with the number closest to the number on the challenged space wins and a tie results in a re-roll. If the defending player loses, they may ask a third player who owns a neighboring city for an extra die roll. Defending players may also bribe attacking players with fans or money. If a player conquers a space, they receive \$100 and their turn is over. By owning half of the surrounding white spaces, that player owns the city and receives a 500 fan bonus and 100 fans each turn per city owned.

Once a player reaches 10,000 fans or completes 5 different colored objective cards, the game transitions to the Golden Finale Stage (GFS) where players win ego tiles. The player who reached the 10,000 fans first gets a bonus of \$2000. At the GFS, players have the option of teaming up with other player(s) and combining ego tiles, which are received by going around the stage. Players receive one turn per \$500, 5000 fans, or stars. The die is rolled once per turn and players move that number of spaces on the stage, collecting the ego tile amount that they land on. The player(s) with the most ego tiles at the end of the game will win.

4.1.2 Dynamics. StarStruck goes beyond the dynamic of territorial and fan acquisition. Throughout the game, players may choose to trade one of four currencies: fans (popularity), money (wealth), cities (power), and stars (symbols of generosity and strategy). The value of these is not just related to the number of turns they result

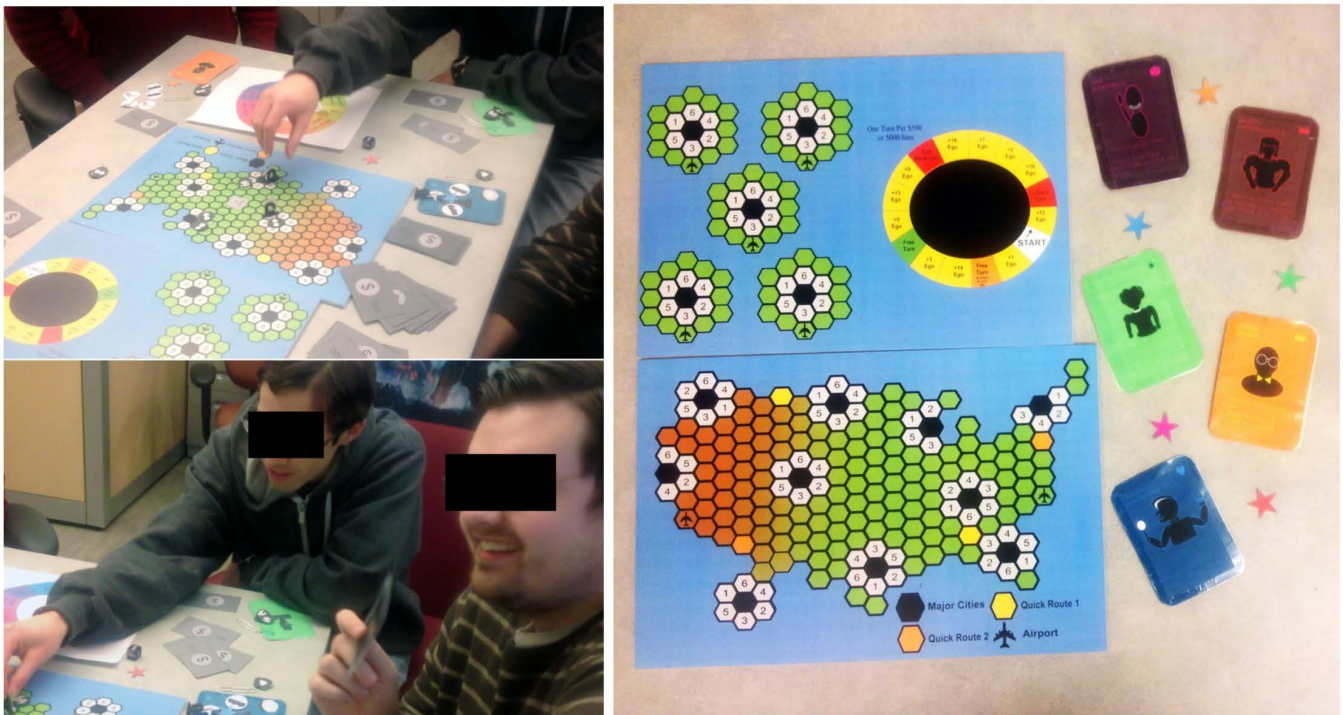


Figure 2: The board and character cards of StarStruck (right); on the left, players engaged with the game.

in at the end of the game, but are specific to what certain types of players might find more important personally. Players who care more about wealth may focus more on obtaining money while players who care more about popularity might try to get more fans. Conquering white hexagons that belong to cities was made easier and more fluid than in games such as Monopoly and Risk to increase the competitiveness in the players. The most that a player can lose from attacking another city is losing another city by lack of defense. Players are rewarded for conquering other cities because of the fan bonus they receive, which brings them closer to the Golden Finale Stage. This is similar to Risk’s mechanic of conquering territories resulting in bonuses, except the bonus in Risk is not necessarily immediate (since it is a card bonus). In StarStruck, players are immediately rewarded. To encourage player movement, quick routes were added that were inspired by the Clue board game. Movement in Risk could sometimes be daunting and take long periods of time; thus, quick routes dealt with this problem in our game. Risk and Monopoly both promote competitive game strategies, but for the purpose of our board game, we wanted to promote and incorporate different game conflict strategies. Beyond competition, the strategies of collaboration, avoidance, compromise, and accommodation were equally encouraged. This was done through different mechanics such as the ability to form alliances, ask for help when attacked, bribe players, and receive bonuses for objective cards based on conflict strategy. One of the main problems with both Risk and Monopoly is the inability for players who are not keeping pace with the other players to have a chance at winning the game. To prevent this from occurring, we added the Golden Finale Stage, which adds

a chance-based mechanic and gives these lagging players the hope of still winning the game. Although players who reached the most fans first have a better chance at winning the game, weaker players can still form teams with other players and win as well. In this way, players who are behind are still in the running, and players who are ahead may still feel confident they can win. One of the most important dynamics in StarStruck that is crucial to its use in teaching conflict resolution strategies is its lively metagame. Players are encouraged to negotiate, trade, bribe, form alliances, and ask for help outside of gameplay. This relates to the face-to-face experience that players receive through playing a board game that cannot be reproduced in a video game. By designing mechanics that permit a versatile metagame, the many player interactions that can occur far exceed an implementation of potential gameplay scenarios. The metagame is something that cannot be controlled by the rules, and that is an intended feature of our board game. By giving players more freedom, we give them more opportunities to encounter and act upon conflict-based situations.

4.1.3 *Aesthetics.* StarStruck has multiple aesthetics that are created by its unique mechanics and the dynamics that result from them. Besides creating challenge and discovery, as in the games Monopoly and Risk, StarStruck gives players expression, fellowship, and narrative. Challenge results from players attempting to conquer and defend cities. Discovery is caused by the players being exposed to the different conflict strategies as a result of the objective cards and gameplay situations. Players may discover that certain strategies work better than others, or may get to experience a strategy that they had not experienced before. Users get to express



Figure 3: Example of an intermediate StarStruck game state. In this scenario, the red player has already captured several cities. Meanwhile, the (otherwise meek) blue player was looking to fulfill an objective card that encouraged conquering a city owned by a powerful player. Blue was thus prompted to compete with Red for control of a territory. Red had several options, including engaging in a dice battle for the city (competing), ignoring the confrontation (avoiding), bribing Blue to leave (accommodating), working out a trade with Blue (compromising), or asking a neighbor, like the green player, for help (collaborating).

their identities through choosing their character. Any character chosen is race neutral by default, and can be associated with any gender. This is similar to *Zork: Grand Inquisitor*'s labeling of the player character as AFGNCAAP (Ageless, Faceless, Gender-Neutral, Culturally-Ambiguous Adventure Person). Characters are instead associated with a unique symbol that reflects their values. Each character represents different qualities: popular, wealthy, powerful, generous, or wise. If a player identifies with one of these characters or wants to be more like a certain character, they have the ability to do so. By giving participants the option of playing in an initially AFGNCAAP role, players are given more opportunities to express themselves and explore familiar or new conflict resolution strategies. They can choose to play as someone with whom they relate (or not!), which allows for a deeper connection with the game world and focused exploration potential. We chose to base our game's location in the United States because we would be playtesting with American students who would have an interest in "conquering" local cities with which they are familiar. Additional realism is achieved by the inclusion of chance cards similar to those in Monopoly as a means to simulate real life events.

During gameplay, players have the option of playing with different conflict resolution styles by focusing on competition, collaboration, avoidance, compromise, and accommodation. Players can also express themselves in the metagame through forming alliances, bargaining, or even potentially trash-talking. Fellowship is afforded in this game as players are given the option of forming alliances. If



Figure 4: A second StarStruck game state example. Here, the orange player had a strong lead, and was close to winning the pre-finale bonus. However, the pink and blue players decided to form an alliance in which Blue gave money to Pink in exchange for his star (collaborating). Blue was then able to complete an objective card task and take the pre-finale bonus for herself. Had Pink or Blue formed an alliance with Orange, the game could have ended differently. This example demonstrates how the metagame can impact the game state.

their alliance wins at the end, players can share the glory together. Players are encouraged to socialize in the metagame, and this promotes a more social aspect in this game that is not as prevalent in other games.

As players strive to be the most famous rockstar, they are able to narrate their road to fame through the conquering of cities. For example, one player could say, "I was a star in New York City, but as I went on the road to perform at Los Angeles, one of the other players took over my city. Now I must decide whether I want to try to become more famous than the player in Los Angeles, or fly to Paris and become famous there." This type of narrative aesthetic is not unique to Starstruck and is of course possible in other existing games. However, it is an important part of the game's design, as it helps students to more easily discuss and recall their gameplay as they learn about conflict resolution.

4.2 Example Interactions

StarStruck was playtested with approximately fifteen (non-consecutive) hours of gameplay by graduates and undergraduates at UC Santa Cruz. The number of players ranged from 2-5, with an average of three players per game. Players were introduced to the game for the first time to simulate use in an after-school session. The average playtime was about 90 minutes, with a maximum time of two hours. Through testing, we were able to isolate several example scenarios which demonstrate the variety of interactions that players must choose between.

4.2.1 Competing and Avoiding. We were surprised to discover that many players naturally avoided competition by pursuing different cities to conquer. However, this behavior disappeared by mid-game,

when most of the cities had been taken. Players then began to engage in competitive or collaborative strategies unless otherwise encouraged by an objective card. An example of uncooperative play during mid-game is shown in Figure 3, when the blue player's best strategy is to compete with the red player. Players also chose more often to compete for a city when the risks against them had been lowered.

4.2.2 Cooperative Play (Accommodating, Compromising, and Collaborating). Players most often worked together to achieve a goal when a strong player was a threat (Figures 3 and 4). However, players also engaged in casual currency trading. We found that players often questioned aloud whether they could trust another person when engaging in cooperative play, suggesting that they were reflecting upon their choices and thinking carefully about the generated conflict scenarios.

5 CONCLUSIONS

This paper describes the design, development, and reflection on early playtesting for an educational board game called StarStruck. The game is designed to let players explore the configurations of possible resource conflicts that occur in the presence of a variety of player values and interests. StarStruck both allows for and prompts players to engage in individual, cooperative, and competitive play. The overall narrative of gameplay is designed to be recounted as

a personal journey (from each player's perspective) that can be used as case studies by teachers in a classroom setting to teach students about conflicts, resolution strategies, and outcomes. Initial playtesting appears to demonstrate that various strategies are supported, including off-board negotiations between players and the overall metagame that also reflects and amplifies the differences in personalities of players in conflict.

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REFERENCES

- [1] Rex Brynen and Gary Milante. 2013. Peacebuilding with games and simulations. *Simulation & Gaming* 44, 1 (2013), 27–35.
- [2] Simon Egenfeldt-Nielsen. 2007. Third generation educational use of computer games. *Journal of educational Multimedia and Hypermedia* 16, 3 (2007), 263–281.
- [3] Robin Hunicke, Marc LeBlanc, and Robert Zubek. 2004. MDA: A formal approach to game design and game research. In *Proceedings of the AAAI Workshop on Challenges in Game AI*, Vol. 4. 1722.
- [4] Tricia S Jones and Randy Compton. 2002. *Kids working it out: Stories and strategies for making peace in our schools*. John Wiley & Sons.
- [5] Kenneth W Thomas. 1974. Thomas-Kilmann Conflict Mode Instrument, Xicom. Inc., Tuxedo, NY (1974).
- [6] Mark Young, Melanie Killen, Jennie Lee-Kim, and Yoonjung Park. 2012. Introducing Cool School: Where Peace Rules and Conflict Resolution can be Fun. *International Journal of Game-Based Learning (IJGBL)* 2, 4 (2012), 74–83.