Dice Game Report

by Lotus Li

P.S. Final rule sets are at the end of this report.

1. The Third Game: Fix'em Iteration 1
    a) General Ideas (02/03/2019)
        i. Rolling a lot of dices: fun.
        ii. Do correct predictions on dices' points to win: chance.
        iii. Different colors for different players, each player can control (to some degree) his own dices: strategies.
        iv. Two players: competition.
        v. Players act at the same time: fairness.
    b) Original Rules: (Bold for Terms)
        i. Two players. The same rules for each player.
        ii. Zones: **Game zone** is divided into two parts: **Shared Zone**, and **Player's Zone**. The **Shared Zone** is divided into **Field Zone (Field)** and **Field Queue**. The **Field** locates at the center of the table, and the **Field Queue** is a small space next to the **Field**. The **Shared Zone** is shared by each player, while each player has their own **Player's Zone** (that means two **Player's Zone** in total). Each Player's Zone is divided into 4 parts: **Prediction Zone**, **Hand Zone (Hand)**, **Play-card Zone** and **Supportive Zone**.
        iii. Dices: Dices in this game are either **Gaming Dices** or **Indicator Dices (Indicators)**. **Indicators** look different from **Gaming Dices**. **Gaming Dices** of different players are different in colors but the same in size (so two colors for two players). Each player has 36 (one box of) **Gaming Dices** and 5 **Indicators**. Each Gaming Dice can switch between 2 **Status**: in the **Shared Zone** (called a **Field Dice**), or in the **Hand** (called a **Hand Dice**). A **Gaming Dice** will switch its **Status** under certain conditions (**Field Dice** → **Hand Dice**, **Hand Dice** → **Field Dice**. Will be discussed by later rules). All dices are six-faced.
        iv. Stages: The game is round-based. Each **Round** has 5 **Stages**: **Prediction Stage**, **Rolling Stage**, **Card Stage**, **Execution Stage**, **Score Stage**.
        v. Begin the Game: All the Gaming Dices are put in the Field. Indicators are put in the Supportive Zone of each player. Each player has one **Partition**, one **Prediction Paper** and three **Cards** (Card①②③). The **Prediction Paper**, located in the **Prediction Zone**, is used to display players' predictions. The **Partition** and **Cards** are also in the **Supportive Zone**.
        vi. **Prediction Stage**: Each player chooses a point 1~6 and predicts the amount of dices in that point in the next rolling results. Each player marks his prediction on the **Prediction Paper** using (up to 3) **Indicators**. Prediction Stage is the only stage that allows a player to manipulate his **Prediction Paper** or **Prediction Zone**.
        vii. **Rolling Stage**: Each player grabs his own all **Gaming Dices** in the **Shared Zone** (including **Field** and **Field Queue**). Both players roll their dices at the same time into the **Field**. Rolling Stage is the only stage that allows changing the points of **Gaming Dices**.
        viii. **Card Stage**: Each player erects his **Partition** to separate the [**Shared Zone** + **Prediction Zone**] and [Other **Player's Zones**]. Then each player can freely observe the situation. If needed, players can ask each other's **Hand Dices** points. (Hand Zone is blocked by the Partition, because playing the **Card②** needs to put some **Hand Dices** on it. But **Hand Dices** points are actually public to the other player.) Then the player can choose a **Card** to place it in his **Play-card Zone**. The **Cards** has instructions on them about how to put **Indicators** or **Hand Dices** on them. The player can also choose not playing any **Card** in this **Round**. After both players finish placing **Cards**, they remove the **Partitions** at the same time to display the **Play-card Zone**. **Card Stage** is the only stage that allows players to manipulate their **Play-card Zones**.
        ix. **Execution Stage**: The **Cards** that were played by players in the **Card Stage** take their effects.

            1) **Card①**: Move one **Field Dice** of the player's own color to his **Hand** (it turns the **Field Dice** into a **Hand Dice**). The dice cannot rotate during this process. When the player plays this card, he need to put one **Indicator** on it to indicate the point of the

dice he want to move. If there's no that number in his color in the **Field** or **Field Queue**, this card doesn't do anything.

2) **Card②**: Move any amount of **Hand Dice(s)** from the player's **Hand** to the **Field** (it turns those **Hand Dices** into **Field Dices**). None of the dices can rotate during this process. When the player plays this card, he need to put the **Hand Dices** to move on the card.

3) **Card③**: Move one **Hand Dice** of another player's **Hand** to the **Field Queue**. When playing this card, the player need to put two **Indicators** on the card to instruct both the dice's point and the player's index. If the player doesn't have a dice of that number in his **Hand**, this card doesn't do anything.

4) The sequence for the **Cards** to take effects is ②→③→①.

x. **Score Stage**: Count the amounts of dices in the **Field** (**Field Queue** not included) of each point. If none of the two predictions is correct, then do another **Round** of game. If any player's prediction is exactly correct, the game ends and he directly wins. If the both predictions are correct, it is a tie.

c) Observations:
   i. The game is too balanced between two players. We almost did all the same strategies.
   ii. Not exciting enough.

d) Analysis for Improvements:
   i. The game needs more players to play, to break its perfect balance and introduce more interactions.
   ii. Winning in one correct prediction is too much luck with too little strategies. Should lead in scoring rules.

2. Iteration 2：

a) Play testing Time: 02/04/2019

b) Playtesters(4): Dan Seed, Adela Kapuscinska, Wenyu Mao, Lotus Li

c) Rules:
   i. 3~4 players. The same rules for each player.
   ii. Zones: **Game zone** is divided into two parts: **Shared Zone**, and **Player's Zone**. The **Shared Zone** is divided into **Field Zone (Field)** and **Field Queue**. The **Field** locates at the center of the table, and the **Field Queue** is a small space next to the **Field**. The **Shared Zone** is shared by each player, while each player has their own **Player's Zone** (that means two **Player's Zone** in total). Each Player's Zone is divided into 5 parts: **Prediction Zone**, **Hand Zone (Hand)**, **Play-card Zone**, **Supportive Zone**, and **Score Zone**.
   iii. Dices: Dices in this game are either **Gaming Dices** or **Indicator Dices (Indicators)**. **Indicators** look different from **Gaming Dices**. **Gaming Dices** of different players are different in colors but the same in size (so two colors for two players). Each player has 36 (one box of) **Gaming Dices** and 5 **Indicators**. Each Gaming Dice can switch among 3 **Status**: in the **Shared Zone** (called a **Field Dice**), in the **Hand** (called a **Hand Dice**), or in a **Score Zone** (called a **Score Dice**). A **Gaming Dice** will switch its **Status** under certain conditions (**Field Dice** → **Hand Dice**, **Hand Dice** → **Field Dice**, **Field Dice** → **Score Dice**. Will be discussed by later rules). All dices are six-faced.
   iv. Stages: The game is round-based. Each **Round** has 5 **Stages**: **Prediction Stage**, **Rolling Stage**, **Card Stage**, **Execution Stage**, **Score Stage**.
   v. Begin the Game: All the Gaming Dices are put in the Field. Indicators are put in the Supportive Zone of each player. Each player has one **Partition**, one **Prediction Paper** and three **Cards** (Card①②③). The **Prediction Paper**, located in the **Prediction Zone**, is used to display players' predictions. The **Partition** and **Cards** are also in the **Supportive Zone**.
   vi. **Prediction Stage**: Each player chooses a point 1~6 and predicts the amount of dices in that point in the next rolling results. Each player marks his prediction on the **Prediction Paper** using (up to 3) **Indicators**. Prediction Stage is the only stage that allows a player to manipulate his **Prediction Paper** or **Prediction Zone**.

vii. **Rolling Stage**: Each player grabs his own all **Gaming Dices** in the **Shared Zone** (including **Field** and **Field Queue**). Both players roll their dices at the same time into the **Field**. Rolling Stage is the only stage that allows changing the points of **Gaming Dices**.

viii. **Card Stage**: Each player erects his **Partition** to separate the [**Shared Zone** + **Prediction Zone** + Score Zone] and [Other **Player's Zones**]. Then each player can freely observe the situation. If needed, players can ask each other's **Hand Dices** points. (Hand Zone is blocked by the Partition, because playing the **Card**② needs to put some **Hand Dices** on it. But **Hand Dices** points are actually public to the other player.) Then the player can choose a **Card** to place it in his **Play-card Zone**. The **Cards** has instructions on them about how to put **Indicators** or **Hand Dices** on them. The player can also choose not playing any **Card** in this **Round**. After both players finish placing **Cards**, they remove the **Partitions** at the same time to display the **Play-card Zone**. **Card Stage** is the only stage that allows players to manipulate their **Play-card Zones**.

ix. **Execution Stage**: The **Cards** that were played by players in the **Card Stage** take their effects.

5) **Card**①: Move one **Field Dice** of the player's own color to his **Hand** (it turns the **Field Dice** into a **Hand Dice**). The dice cannot rotate during this process. When the player plays this card, he need to put one **Indicator** on it to indicate the point of the dice he want to move. If there's no that number in his color in the **Field** or **Field Queue**, this card doesn't do anything.

6) **Card**②: Move any amount of **Hand Dice(s)** from the player's **Hand** to the **Field** (it turns those **Hand Dices** into **Field Dices**). None of the dices can rotate during this process. When the player plays this card, he need to put the **Hand Dices** to move on the card.

7) **Card**③: Move one **Hand Dice** of another player's **Hand** to the **Field Queue**. When playing this card, the player need to put two **Indicators** on the card to instruct both the dice's point and the player's index. If the player doesn't have a dice of that number in his **Hand**, this card doesn't do anything.

8) The sequence for the **Cards** to take effects is ②→③→①.

x. **Score Stage**: Count the amounts of dices in the **Field** (**Field Queue** not included) of each point. If any player's prediction is exactly correct, he takes all the dices in the **Field** of the point he made prediction of. (For example, Tom predicted 10 dices of the number 3 and it is correct, so he takes the 10 dices.) If two or more players made the same prediction and all correct, they divide the Score Dices, with the remaining of division removed from the game totally. These dices are removed from the **Field** and go to the **Score Zone** of the certain player. (It turns the **Field Dices** into **Score Dices**). Then, if the amount of the number of all **Field Dices** are less than the number of players, the game ends, and whoever has the largest number of **Score Dices** in his **Score Zone** wins. Otherwise, do another **Round** of game.

d) Observations: It took about 10 minutes for the new players to understand the rules. Too many dices to count amounts, and they always scatter everywhere after rolling, very tiring to manipulate. The game lasted for too long time (over 30 minutes) and everybody became very tired. The players didn't seem enjoying it. The first one to win dices always wins the biggest amount, so for the others it is hard to win the difference back.

e) Feedback: The rules are too complex. Game too abstract, not fun to play. Difficult to count dices. Hard to come back. But the idea itself has great potential.

f) Analysis for Improvements:

1) Counting dices too tedious. Should decrease the amount of **Field Dices**.

2) Use a real bowl as the Field. Throwing dices into a bowl should be a lot of fun.

3) Props too rough. Need better refined props.

4) 3 players could be better than 4. Too many players add to the complexity of gaming processes.

5) I want to encourage more strategies, like encourage players to take more Field Dices of his opponents' colors. How to encourage this strategy?

3. Iteration 3：

a) Playtesting Time: 02/05/2019
b) Playtesters(3): Weidi Tang, Min Pan, Zhiguo Lai
c) Rules:
   i. 3~4 players. The same rules for each player.
   ii. Zones: **Game zone** is divided into two parts: **Shared Zone**, and **Player's Zone**. The **Shared Zone** is divided into **Field Zone (Field)** and **Field Queue**. The **Field** locates at the center of the table, and the **Field Queue** is a small space next to the **Field**. The **Shared Zone** is shared by each player, while each player has their own **Player's Zone** (that means two **Player's Zone** in total). Each Player's Zone is divided into 5 parts: **Prediction Zone**, **Hand Zone (Hand)**, **Play-card Zone**, **Supportive Zone**, and **Score Zone**.
   iii. Dices: Dices in this game are either **Gaming Dices** or **Indicator Dices (Indicators)**. **Indicators** look different from **Gaming Dices**. **Gaming Dices** of different players are different in colors but the same in size (so two colors for two players). Each player has 36 (one box of) **Gaming Dices** and 5 **Indicators**. Each Gaming Dice can switch among 4 **Status**: in the **Shared Zone** (called a **Field Dice**), in the **Hand** (called a **Hand Dice**), in a **Score Zone** (called a **Score Dice**), or in a **Supportive Zone** (called a **Waiting Dice**). A **Gaming Dice** will switch its **Status** under certain conditions (**Field Dice** → **Hand Dice**, **Hand Dice** → **Field Dice**, **Field Dice** → **Score Dice**, Waiting Dice → Field Dice. Will be discussed by later rules). All dices are six-faced.
   iv. Stages: The game is round-based. Each **Round** has 5 **Stages**: **Prediction Stage**, **Rolling Stage**, **Card Stage**, **Execution Stage**, **Score Stage**.
   v. Begin the Game: Each player has 6 **Hand Dices** in his **Hand Zone**, and 4 **Field Dices** in the shared **Field**. All other Gaming Dices are in the **Supportive Zones**. The 6 **Hand Dices** are of points 1~6 (each dice different point). The **Field** is a real bowl. Indicators are put in the Supportive Zone of each player. Each player has one **Partition**, one **Prediction Paper**, a **Gaming Paper** (to mark the Hand Zone and Play-card Zone of each player) and three **Cards** (Card①②③). The **Prediction Paper**, located in the **Prediction Zone**, is used to display players' predictions. The **Partition** and **Cards** are also in the **Supportive Zone**.
   vi. **Prediction Stage**: Each player chooses a point 1~6 and predicts the amount of dices in that point in the next rolling results. Each player marks his prediction on the **Prediction Paper** using (up to 3) **Indicators**. Prediction Stage is the only stage that allows a player to manipulate his **Prediction Paper** or **Prediction Zone**.
   vii. **Rolling Stage**: Each player grabs his own all **Gaming Dices** in the **Shared Zone** (including **Field** and **Field Queue**). Both players roll their dices at the same time into the **Field**. Rolling Stage is the only stage that allows changing the points of **Gaming Dices**.
   viii. **Card Stage**: Each player erects his **Partition** to separate the [**Shared Zone** + **Prediction Zone** + Score Zone] and [Other **Player's Zones**]. Then each player can freely observe the situation. If needed, players can ask each other's **Hand Dices** points. (Hand Zone is blocked by the Partition, because playing the **Card②** needs to put some **Hand Dices** on it. But **Hand Dices** points are actually public to the other player.) Then the player can choose a **Card** to place it in his **Play-card Zone**. The **Cards** has instructions on them about how to put **Indicators** or **Hand Dices** on them. The player can also choose not playing any **Card** in this **Round**. After both players finish placing **Cards**, they remove the **Partitions** at the same time to display the **Play-card Zone**. **Card Stage** is the only stage that allows players to manipulate their **Play-card Zones**.
   ix. **Execution Stage**: The **Cards** that were played by players in the **Card Stage** take their effects.
   9) **Card①**: Move one **Field Dice** of the player's own color to his **Hand** (it turns the **Field Dice** into a **Hand Dice**). The dice cannot rotate during this process. When the player plays this card, he need to put one **Indicator** on it to indicate the point of the dice he want to move. If there's no that number in his color in the **Field** or **Field Queue**, this card doesn't do anything.
   10) **Card②**: Move any amount of **Hand Dice(s)** from the player's **Hand** to the **Field** (it turns those **Hand Dices** into **Field Dices**). None of the dices can rotate during this

process. When the player plays this card, he need to put the **Hand Dices** to move on the card.

11) **Card③**: Move one **Hand Dice** of another player's **Hand** to the **Field Queue**. When playing this card, the player need to put two **Indicators** on the card to instruct both the dice's point and the player's index. If the player doesn't have a dice of that number in his **Hand**, this card doesn't do anything.

12) The sequence for the **Cards** to take effects is ②→③→①.

x. **Score Stage**: Count the amounts of dices in the **Field** (**Field Queue** not included) of each point. If any player's prediction is exactly correct, he takes all the dices in the **Field** of the point he made prediction of. (For example, Tom predicted 10 dices of the number 3 and it is correct, so he takes the 10 dices.) If two or more players made the same prediction and all correct, they divide the Score Dices, with the remaining of division removed from the game totally. These dices are removed from the **Field** and go to the **Score Zone** of the certain player. (It turns the **Field Dices** into **Score Dices**). Then, the same amount of each color's **Waiting Dices**, from the **Supportive Zones**, are put into the **Field**. (For example, the 10 dices taken by Tom contains 3 Tom's blue dices, 6 Jerry's red dices and 1 Anna's green dice. So Tom puts 3 of his blue **Waiting Dices**, Jerry puts 6 red and Anna puts 1 green into the **Field**/bowl.) (It turns **Waiting Dices** into **Field Dices**.) Then, if the amount of the number of all **Field Dices** are less than the number of players, the game ends, and whoever has the largest number of **Score Dices** in his **Score Zone** wins. Otherwise, do another **Round** of game.

d) Observations: players got the rules quickly and enjoyed the game. They communicated and went against the player with highest score a lot. While the game again took a long time without scoring much. No player made any alliance with others.

e) Feedback:

i. Weidi: It is fun to play with strategies. The game is full of competition and communications. But the card ③ feels not in harmony with the other two cards. How about changing card ③ into re-rolling one hand dice of another player? Or making card ③ benefit the player himself a little bit? I didn't know when the game would end so felt it endless. Players should know the goal and end of the game clearly from the very beginning. Also it is hard to come back once fallen behind.

ii. Min: An interesting game to play. Complex and took time to learn, but the strategies are fun in a long term.

iii. Lai: It is not easy to check others' hand dices in the **Card Stage**. Rolling dices are tedious. Can a dealer does it? In many rounds nobody made any correct prediction, which is boring. The game is not much of a strategy game because players can't see a clear way to win.

f) Analysis for Improvement: The game is still complex. Better props help the processes, and further I need Score Paper and Stage Marker. For now, refilling the Field Dices with the same color dices of removed dices, so the strategy "taking others' dices first" is still out of the game. Too many times nobody predicted correctly. Should add in some awards even nobody predicted correctly.

4. Iteration 4：

a) Playtesting Time: 02/05/2019

b) Playtesters(3): Spencer, Jiajun, Mong-Yah

c) Rules:

i. 3 players. The same rules for each player.

ii. Zones: **Game zone** is divided into two parts: **Shared Zone**, and **Player's Zone**. The **Shared Zone** is divided into **Field Zone (Field)** and **Field Queue**. The **Field** locates at the center of the table, and the **Field Queue** is a small space next to the **Field**. The **Shared Zone** is shared by each player, while each player has their own **Player's Zone** (that means two **Player's Zone** in total). Each Player's Zone is divided into 5 parts: **Prediction Zone**, **Hand Zone (Hand)**, **Play-card Zone**, **Supportive Zone**, and **Score Zone**.

iii. Dices: Dices in this game are either **Gaming Dices** or **Indicator Dices (Indicators)**. **Indicators** look different from **Gaming Dices**. **Gaming Dices** of different players are

different in colors but the same in size (so two colors for two players). Each player has 36 (one box of) **Gaming Dices** and 5 **Indicators**. Each Gaming Dice can switch among 4 **Status**: in the **Shared Zone** (called a **Field Dice**), in the **Hand** (called a **Hand Dice**), in a **Score Zone** (called a **Score Dice**), or in a **Supportive Zone** (called a **Waiting Dice**). A **Gaming Dice** will switch its **Status** under certain conditions (**Field Dice** → **Hand Dice**, **Hand Dice** → **Field Dice**, **Field Dice** → **Score Dice**, Waiting Dice → Field Dice. Will be discussed by later rules). All dices are six-faced.

iv. Stages: The game is round-based. Each **Round** has 5 **Stages**: **Prediction Stage**, **Rolling Stage**, **Card Stage**, **Execution Stage**, **Score Stage**.

v. Begin the Game: Each player has 6 **Hand Dices** in his **Hand Zone**, and 4 **Field Dices** in the shared **Field**. All other Gaming Dices are in the **Supportive Zones**. The 6 **Hand Dices** are of points 1~6 (each dice different point). The **Field** is a real bowl. Indicators are put in the Supportive Zone of each player. Each player has one **Partition**, one **Prediction Paper**, a **Gaming Paper** (to mark the Hand Zone and Play-card Zone of each player) and three **Cards** (Card①②③). The **Prediction Paper**, located in the **Prediction Zone**, is used to display players' predictions. The **Partition** and **Cards** are also in the **Supportive Zone**.

vi. **Prediction Stage**: Each player chooses a point 1~6 and predicts the amount of dices in that point in the next rolling results. Each player marks his prediction on the **Prediction Paper** using (up to 3) **Indicators**. Prediction Stage is the only stage that allows a player to manipulate his **Prediction Paper** or **Prediction Zone**.

vii. **Rolling Stage**: Each player grabs his own all **Gaming Dices** in the **Shared Zone** (including **Field** and **Field Queue**). Both players roll their dices at the same time into the **Field**. Rolling Stage is the only stage that allows changing the points of **Gaming Dices**.

viii. **Card Stage**: Each player erects his **Partition** to separate the [**Shared Zone** + **Prediction Zone** + Score Zone] and [Other **Player's Zones**]. Then each player can freely observe the situation. If needed, players can ask each other's **Hand Dices** points. (Hand Zone is blocked by the Partition, because playing the **Card②** needs to put some **Hand Dices** on it. But **Hand Dices** points are actually public to the other player.) Then the player can choose a **Card** to place it in his **Play-card Zone**. The **Cards** has instructions on them about how to put **Indicators** or **Hand Dices** on them. The player can also choose not playing any **Card** in this **Round**. After both players finish placing **Cards**, they remove the **Partitions** at the same time to display the **Play-card Zone**. **Card Stage** is the only stage that allows players to manipulate their **Play-card Zones**.

ix. **Execution Stage**: The **Cards** that were played by players in the **Card Stage** take their effects.

13) **Card①**: Move one **Field Dice** of the player's own color to his **Hand** (it turns the **Field Dice** into a **Hand Dice**). The dice cannot rotate during this process. When the player plays this card, he need to put one **Indicator** on it to indicate the point of the dice he want to move. If there's no that number in his color in the **Field** or **Field Queue**, this card doesn't do anything.

14) **Card②**: Move any amount of **Hand Dice(s)** from the player's **Hand** to the **Field** (it turns those **Hand Dices** into **Field Dices**). None of the dices can rotate during this process. When the player plays this card, he need to put the **Hand Dices** to move on the card.

15) **Card③**: Move one **Hand Dice** of another player's **Hand** to the **Field Queue**. When playing this card, the player need to put two **Indicators** on the card to instruct both the dice's point and the player's index. If the player doesn't have a dice of that number in his **Hand**, this card doesn't do anything.

16) The sequence for the **Cards** to take effects is ②→③→①.

x. Score **Stage**: Count the amounts of dices in the **Field** (**Field Queue** not included) of each point. For the player whose prediction is the closest from the correct result, he gets one **Score Dice** as award. If two or more players are both closest to the correct results, nobody gets award. Then, if any player's prediction is exactly correct, he takes all the dices in the **Field** of the point he made prediction of. (For example, Tom predicted 10 dices of the number 3 and it is correct, so he takes the 10 dices.) If two or

more players made the same prediction and all correct, they divide the Score Dices, with the remaining of division removed from the game totally. These dices are removed from the **Field** and go to the **Score Zone** of the certain player. (It turns the **Field Dices** into **Score Dices**). Then, the same amount of the player's color's **Waiting Dices**, from the **Supportive Zones**, are put into the **Field**. (For example, the 10 dices taken by Tom contains 3 Tom's blue dices, 6 Jerry's red dices and 1 Anna's green dice. Then Tom puts 10 of his blue **Waiting Dices** into the **Field**/bowl.) (It turns **Waiting Dices** into **Field Dices**.) Then, if the amount of the number of all **Field Dices** are less than the number of players, the game ends, and whoever has the largest number of **Score Dices** in his **Score Zone** wins. Otherwise, do another **Round** of game.

d) Observations: Players all played seriously and enjoyed the game. It's hard to come back once fallen behind. Players are very isolated, all growing by themselves without going against each other or making alliances. Jiaju stored many Hand Dices of the same point, trying to score much in one single round. Mong-Yah carefully predicted 3 dices every round. Mong-Yah won finally.

e) Feedback:
   i. Spencer: Complex and fun. How about rolling the prediction dices?
   ii. Jiajun: I like it very much. I understood the rules quickly, and then was calculating all the time. The game feels like a real tabletop game. But after calculating I found I couldn't win. And it is just so hard to come back, because who scores will get more control over the game by adding his own dices into the Field. Because going against the strongest player doesn't bring benefits to me, I didn't want the third player to exceed me when I went against the strongest one, so I wouldn't do that. For the same reason players wouldn't align with other players. The card ③ is really useless, because the card ② is functioned before it.
   iii. Mong-Yah: Good game full of strategies. Stable growth is the way to win.

f) Analysis for Improvement:
   i. **Card**③ needs to take priority over **Card**②, or it is useless.
   ii. Refilling with the scored player's color dices makes the player stronger. Hard to come back.
   iii. **Field Dices** too few (only 12), so every round's scoring is close to 3. I can add more **Field Dices** when the game begins.
   iv. Award dice every round doesn't work. Most time everybody are the same close to the correct prediction (by 1), then nobody gets the award. And 1 Score Dice's award is too much for predicting correctly often brings 3 **Score Dices**.
   v. The strategies and interactions among players is not strong enough. When every player just grows his own strength, the game is not so fun.

5. Iteration 5: Thought experiment on 02/05/2019

a)
   i. Experiment: Everytime a player made a correct prediction, increase his Field Dice by 1, instead of taking out the dices (so **Score Dice** is removed from the rules completely). Whoever have the largest amount of **Field Dice** + **Hand Dice** when the game ends wins.
   ii. Analysis: In this case, whoever for the most times predicts correctly will win. So it encourages players to make stable predictions and growth rather than taking chances. It will make the game less exciting or passionate.
   iii. Result: won't work.

b)
   i. Experiment: Everytime a player made a correct prediction, increase his Field Dice by 1. Keep all the rules about Score Dices. Refill the Field with original (different) colors dices like in the Iteration 3.
   ii. Analysis: The player becomes stronger by winning rounds. It makes coming back difficult. But by changing back the refilling rule, the player grows less than in the Iteration 4.
   iii. Result: won't work.

c)

i. Why did I originally wanted to increase the scorer's strength? → To encourage the strategy for a player to take his opponents' dices more than his own dices.
ii. Could it work? → No. Actually nobody can decide whose dices to take. It is purely by chance. So it is not any strategy.
iii. Result: I should just remove the rule refilling with single color dice. Don't think further for the "taking others' dices" strategy.

6. Iteration 6:
   a) Playtesting Time: 02/09/2019
   b) Playtesters(3): Tianyi Zhao, Yidi Zhu, Lotus Li
   c) Rules:
      i. 3 players. The same rules for each player.
      ii. Zones: **Game zone** is divided into two parts: **Shared Zone**, and **Player's Zone**. The **Shared Zone** is divided into **Field Zone (Field)** and **Field Queue**. The **Field** locates at the center of the table, and the **Field Queue** is a small space next to the **Field**. The **Shared Zone** is shared by each player, while each player has their own **Player's Zone** (that means two **Player's Zone** in total). Each Player's Zone is divided into 5 parts: **Prediction Zone**, **Hand Zone (Hand)**, **Play-card Zone**, **Supportive Zone**, and **Score Zone**.
      iii. Dices: Dices in this game are either **Gaming Dices** or **Indicator Dices (Indicators)**. **Indicators** look different from **Gaming Dices**. **Gaming Dices** of different players are different in colors but the same in size (so two colors for two players). Each player has 36 (one box of) **Gaming Dices** and 5 **Indicators**. Each Gaming Dice can switch among 4 **Status**: in the **Shared Zone** (called a **Field Dice**), in the **Hand** (called a **Hand Dice**), in a **Score Zone** (called a **Score Dice**), or in a **Supportive Zone** (called a **Waiting Dice**). A **Gaming Dice** will switch its **Status** under certain conditions (**Field Dice** → **Hand Dice**, **Hand Dice** → **Field Dice**, **Field Dice** → **Score Dice**, Waiting Dice → Field Dice. Will be discussed by later rules). All dices are six-faced.
      iv. Stages: The game is round-based. Each **Round** has 5 **Stages**: **Prediction Stage**, **Rolling Stage**, **Card Stage**, **Execution Stage**, **Score Stage**.
      v. Begin the Game: Each player has 6 **Hand Dices** in his **Hand Zone**, and 6 **Field Dices** in the shared **Field**. All other Gaming Dices are in the **Supportive Zones**. The 6 **Hand Dices** are rolled to randomly generate their original points. The **Field** is a real bowl. Indicators are put in the Supportive Zone of each player. Each player has one **Partition**, one **Prediction Paper**, a **Gaming Paper** (to mark the Hand Zone and Play-card Zone of each player) and three **Cards** (Card①②③). The **Prediction Paper**, located in the **Prediction Zone**, is used to display players' predictions. The **Partition** and **Cards** are also in the **Supportive Zone**.
      vi. **Prediction Stage**: Each player chooses a point 1~6 and predicts the amount of dices in that point in the next rolling results. Each player marks his prediction on the **Prediction Paper** using (up to 3) **Indicators**. Prediction Stage is the only stage that allows a player to manipulate his **Prediction Paper** or **Prediction Zone**.
      vii. **Rolling Stage**: Each player grabs his own all **Gaming Dices** in the **Shared Zone** (including **Field** and **Field Queue**). Both players roll their dices at the same time into the **Field**. Rolling Stage is the only stage that allows changing the points of **Gaming Dices**.
      viii. **Card Stage**: Each player erects his **Partition** to separate the [**Shared Zone** + **Prediction Zone** + Score Zone] and [Other **Player's Zones**]. Then each player can freely observe the situation. If needed, players can ask each other's **Hand Dices** points. (Hand Zone is blocked by the Partition, because playing the **Card②** needs to put some **Hand Dices** on it. But **Hand Dices** points are actually public to the other player.) Then the player can choose a **Card** to place it in his **Play-card Zone**. The **Cards** has instructions on them about how to put **Indicators** or **Hand Dices** on them. The player can also choose not playing any **Card** in this **Round**. After both players finish placing **Cards**, they remove the **Partitions** at the same time to display the **Play-card Zone**. **Card Stage** is the only stage that allows players to manipulate their **Play-card Zones**.

ix. **Execution Stage**: The **Cards** that were played by players in the **Card Stage** take their effects.

17) **Card①**: Move one **Field Dice** of the player's own color to his **Hand** (it turns the **Field Dice** into a **Hand Dice**). The dice cannot rotate during this process. When the player plays this card, he need to put one **Indicator** on it to indicate the point of the dice he want to move. If there's no that number in his color in the **Field** or **Field Queue**, this card doesn't do anything.

18) **Card②**: Move any amount of **Hand Dice(s)** from the player's **Hand** to the **Field** (it turns those **Hand Dices** into **Field Dices**). None of the dices can rotate during this process. When the player plays this card, he need to put the **Hand Dices** to move on the card.

19) **Card③**: Move one **Hand Dice** of another player's **Hand** to the **Field Queue**. When playing this card, the player need to put two **Indicators** on the card to instruct both the dice's point and the player's index. If the player doesn't have a dice of that number in his **Hand**, this card doesn't do anything.

20) The sequence for the **Cards** to take effects is ③→②→①.

x. Score **Stage**: Count the amounts of dices in the **Field** (**Field Queue** not included) of each point. ~~For the player whose prediction is the closest from the correct result, he gets one **Score Dice** as award. If two or more players are both closest to the correct results, nobody gets award.~~ Then, if any player's prediction is exactly correct, he takes all the dices in the **Field** of the point he made prediction of. (For example, Tom predicted 10 dices of the number 3 and it is correct, so he takes the 10 dices.) If two or more players made the same prediction and all correct, they divide the Score Dices, with the remaining of division removed from the game totally. These dices are removed from the **Field** and go to the **Score Zone** of the certain player. (It turns the **Field Dices** into **Score Dices**). Then, the same amount of each color's **Waiting Dices**, from the **Supportive Zones**, are put into the **Field**. (For example, the 10 dices taken by Tom contains 3 Tom's blue dices, 6 Jerry's red dices and 1 Anna's green dice. So Tom puts 3 of his blue **Waiting Dices**, Jerry puts 6 red and Anna puts 1 green into the **Field**/bowl.) (It turns **Waiting Dices** into **Field Dices**.) Then, if the amount of the number of all **Field Dices** are less than the number of players, the game ends, and whoever has the largest number of **Score Dices** in his **Score Zone** wins. Otherwise, do another **Round** of game.

d) Observations:

i. Tianyi loves playing it. Tianyi and Lotus fought fiercely, playing all with Game Theory and bluffing skills.

ii. Yidi tried to grow himself stably, but failed.

iii. Tianyi tried to store many Hand Dices of the same point to score a lot in one round, but failed (guess wrongly on other two players' behavior, mis-prodicted by only 1 dice).

iv. The game lasted for a long time, over 40 minutes, that we had to end it ahead of time.

v. Tianyi misunderstood the usage of Card③. He thought dices in the Field Queue were added to the Field after next Rolling Stage (the rule means before). We tested his misunderstood rule. It works well, added to the strategies.

vi. Tianyi and Lotus wanted to make predictions based on the other's prediction, making a deadlock. We changed the rule to making predictions independently and secretly (like the Card Stage). It works well.

e) Feedback:

i. Yidi: The game is too much about randomness and too little about strategies, like gambling. Players don't have methods to win by control. They have to rely on luck and other players' decisions. Players definitely go against each other. The ending condition of using dices out is interesting, but the amount of game dices are too large (36). How about only using half?

ii. Tianyi: Very good game. Like very much. The game is balance and fare. Each card is well-designed, connecting to each other very well. No player would totally lose control in any round; he always has choice to either grow himself or attack others. It is true

that the game results are out of players' control somehow, but it brings another kind of excitement, like Hold'em. How about hiding the hand dices from other players?

iii. Lotus: It is difficult to score because every player goes against each other. It is very important to communicate with other players and use skills like bluffing. How about hiding predictions from other players? How about fix the predictions, not allow for changes?

f) Analysis for Improvement：

i. The interactions among players largely depends on the relationships among them and their personalities.

ii. The game needs clearer and earlier ending conditions.

iii. The game has a good fairness among players.

iv. The game equipped each player with great power to attack others. It is why players can hardly score by normal strategies.

v. The game is somehow great. Some players love it badly. While some players dislike it because they don't like using too much Game Theory (depend on the randomness and opponents' behaviors) instead of their own steady strategies. It is possible to find a way to balance between them, but definitely very hard. It is also the balance between Chance and Strategies in this game, (while not between Luck and Skill, because in this game the skills like knowing the opponents and impromptu acting weight a lot). In this aspect, the game is like a gamble game. So I name it Fix'em.

7. Iteration 7: Thought Experiment – 02/11/2019

a) Ending Condition of the Game

i. Experiment: [End after one kind of Gaming Dices run out] V.S. [End after certain number of rounds]

ii. Analysis:

1. If all players are intelligent enough, the game can easily get stuck that nobody scores in most rounds. And because of the complex processes, each round takes much time to play (especially adding the time to communicate and act). In this case, if the ending condition is using out a certain amount of Gaming Dices, the game can last very long for advanced players while very short for new players. According to those playtesting results, it does happen that way. So I think it is not a good design.

2. If the game ends after certain number of rounds, players would have better game plans. I think 6~10 rounds are proper. But on the other hand, the game is predictable at the last a few rounds. I think a good way to keep players excited and focused, also increase the chance to coming back, is to: first, play the game for 6 rounds. After that, roll a 4-faced dice, and adding that amount of Additional Rounds. In Additional Rounds, all the scoring weights twice.

b) Change the Prediction Making

i. Experiment: [Fix the prediction, can only change by playing a card] V.S. [Roll the predictions randomly]

ii. Analysis:

1. Fix the prediction hardly bring any good things to the game. And it largely hinders the freedom of strategies usage.

2. Rolling the predictions randomly adds too much randomness to the game. As the game has largely depended on the randomness in rolling the Field Dices, at least the Prediction should be something the players can control.

c) Hide More Information

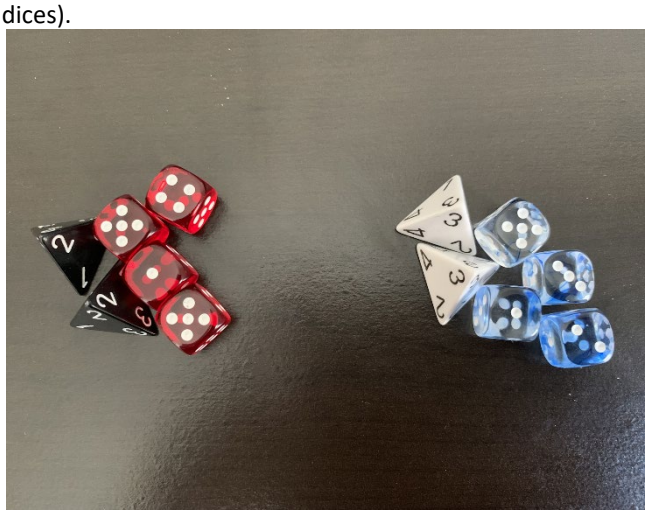
i. Experiment: [Hiding players' Hands] V.S. [Hiding players' predictions] V.S. [Hiding both]

ii. Analysis:

1. Hiding players' Hands and/or prediction can decreases players' power to attack others, which, as discussed in Iteration 6's analysis, is the major reason why scoring is difficult in the game.

2. Hiding players' Hands can't be achieved on tabletop platform, because it enables players to cheat easily. It can work on digital platform, but there players lose the fun to roll dices.
3. Hiding players' prediction makes attacking opponents much more difficult. It can seriously break the current balance in the game and erase the main fun, unless performed with other rules balancing it.

8. Failed Design 1: Run Dog Run
   a) Props: 4 four-sided dices in 2 colors (each color 2 dices). 8 six-sided dices in two colors (each color 4 dices).



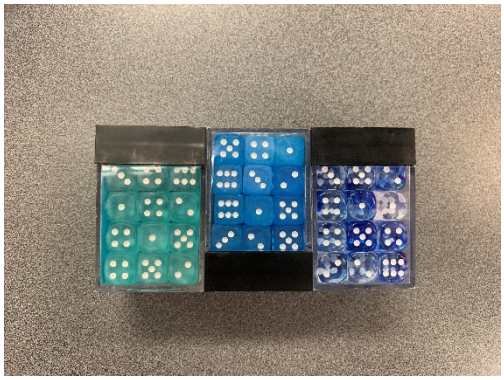
   b) Game Rules: An example of playing.
   A group of friends are watching two of them, Alice and Bob, playing this dice game. Each of the two gets 2 four-sided dices and 4 six-sided dices. The game starts. Alice rolls her 2 four-sided dices. She gets numbers 4 and 2. She decides to roll 4 six-sided dices next time, and predicts that the sum of their (the 4 dices) numbers will be 12 (the digit in ones must be the left number of the four-sided dices' results, and the digit in tens is decided by the player freely). She speaks out "four dogs twelve barks" as the announcement of her prediction. (Announcement in this format is one of the game rules.) (At the same time of Alice playing, Bob is also playing his dices in the same rules. They are competing for reaching a correct prediction in a shorter time.) Then Alice rolls 2 four-sided dices and 4 six-sided dices together. The 4 six-sided dices don't sum to be 12, which means her prediction fails. So she looks at the 2 four-sided dices, whose numbers are 2 and 1. She decides next time to roll only 1 six-sided dice, and predicts its number to be 2. She speaks out "one dog two barks". She rolls 2 four-sided dices together with 1 six-sided dice. The six-sided dice shows 2, which means her prediction successes! At the same time, Bob also just rolled out the correct prediction sum, and his sum number is 11. Alice and Bob both start shouting "bark bark". Only after saying the sum number of "bark"s can the player win. Because Alice only needs to say 2 "bark"s, while Bob needs to say 11 "bark"s, Alice finally wins. Bob went back to the group, and Cindy stepped up to be Alice's opponent. Because Alice won, now she has the right to ask Cindy to say anything in the game, like "x Cindy y eyes".
   c) Design Goals:
      i. Choose one from two dices to be the amount to roll next time, and use the other to make prediction: strategy based on math.
      ii. Rolling a lot of dices is fun.
      iii. Saying funny words: good to watch, good for party.
      iv. Elimination of the loser: everybody can participate.
      v. Only two players: better focus for both players and watchers.
      vi. The winner change the words: award the winner. Increase the desire to win.
      vii. Compete on the time used: quick-pace, a lot of movements, excitement.
   d) Playtesting Time: 02/01/2019
   e) Playtesters: Lotus Li, Tianyi Zhao, Yidi Zhu, Yunhao Li

f) Observations: Players only focused on their own dices, rolling very quickly and saying words very low. Sometimes the game ends in 2 minutes, sometimes takes 10 minutes (and it's tiring).
g) Analysis:
    i. The less dices to roll, the larger chance to win. → Against the original design goal.
    ii. Two players only focus on their own playing. → Bad social.
    iii. Some predictions like 7 are impossible to make.
    iv. Too little strategies. Best choices too easy to find, then just chance takes all.
    v. "Dog" "bark" are not smooth to pronounce. And embarrassed to shout. → Need better words.
    vi. Still good to watch. But players themselves hardly enjoy it.
h) Result: Because some of the flaws of this game are fatal and can hardly be compensated or fixed, I threw this design away.

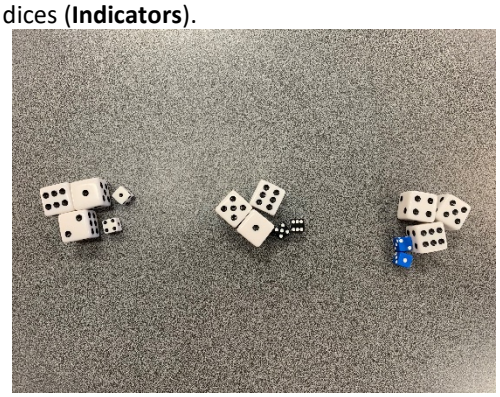
9. Failed Design 2: Dice Soup
    a) Props: 36 (one box of) 6-faced dices.
    b) Rules: 2~4 players, each of them holds half of the dices, throw them together. Then each of them quickly declares a dice point. It means he can remove all dices of this point from the game and keep them as scores. Players cannot declare points that have been declared by other players in this round. The game continues round-by-round until the amount of dices remaining is less than the number of players. Then whoever has the most score dices wins.
    c) Design Goals:
        i. Rolling a lot of dices is fun.
        ii. Require skills in quick observation.
        iii. Players need to balance between speed and accuracy.
        iv. Competition.
    d) Playtesting Time: 02/01/2019
    e) Playtesters: Yidi Zhu, Lotus Li
    f) Observations: Slower pace than I supposed. Counting and gathering dices take time. Very hard to come back. Not exciting.
    g) Analysis:
        i. Too simple.
        ii. Lack of awards.
        iii. Too difficult to come back.
        iv. The randomness is great, but makes no sense. All the points are just numbers.
    h) Result: The game has the potential to be improved into a good game. But it lacks the excitement I originally designed it for. I just threw it away.

10. Final Rules: Need Further Playtesting (but for now just use this)
    a) Props:
        i. A bowl (**Field**).

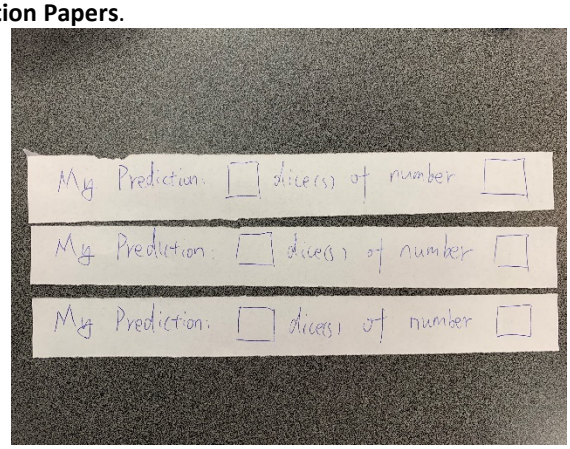
        ii. 36*3 (3 boxes of) 6-faced dices (**Gaming Dices**).



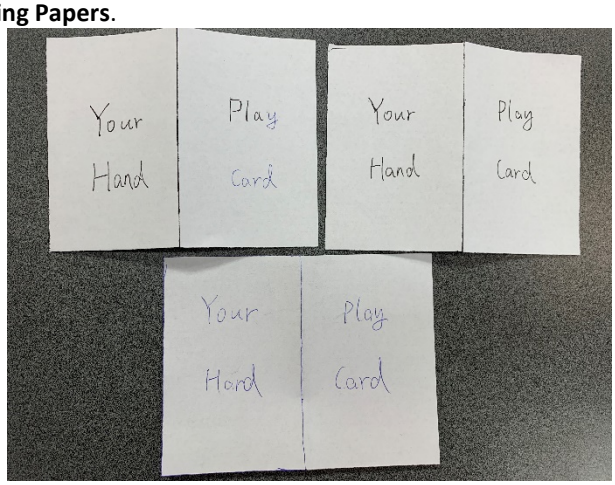
iii. 5*3 6-faced dices (**Indicators**).



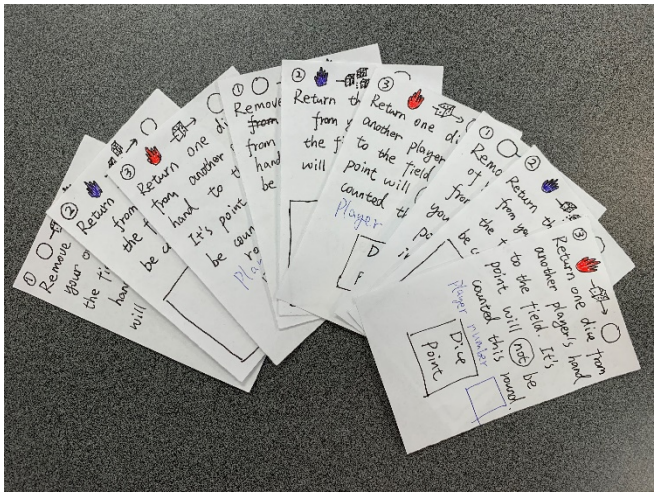
iv. 3 **Prediction Papers**.



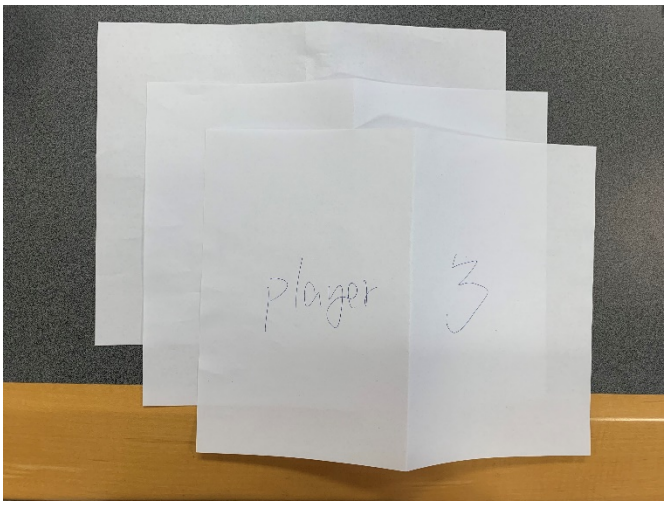
v. 3 **Gaming Papers**.



vi. 3*3 **Cards**.



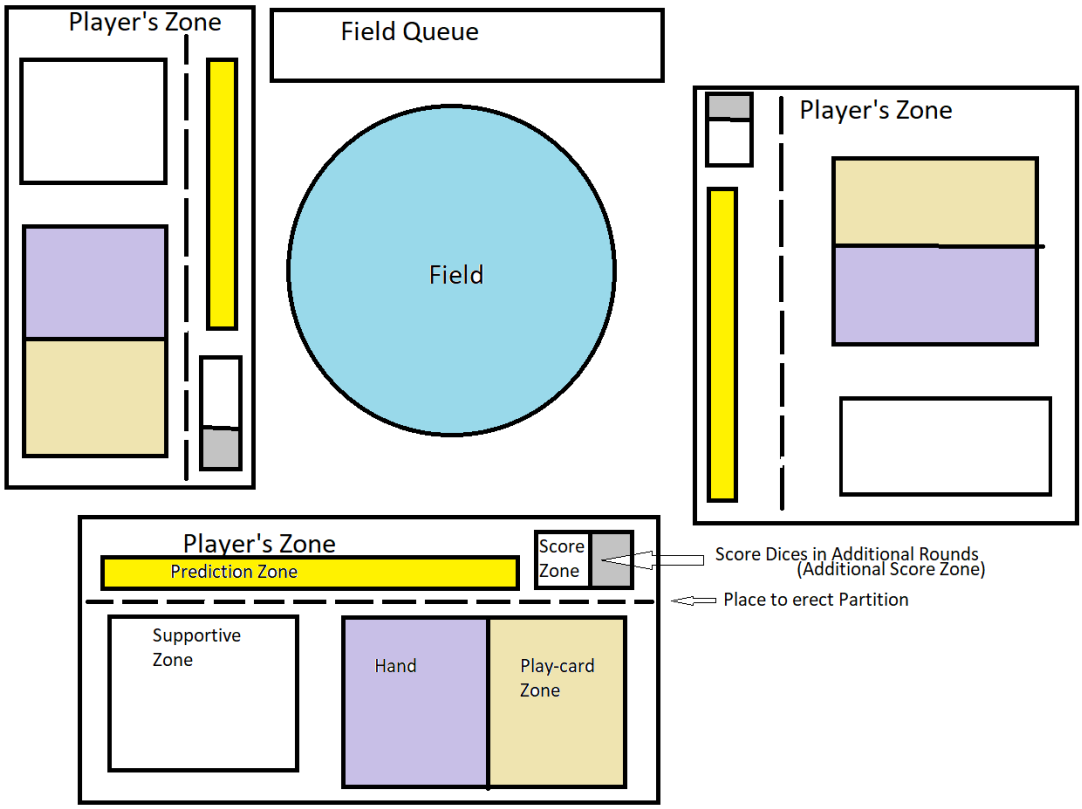
vii. 3 **Partitions**.



viii. 1 4-faced dice.

b) 3 players. The same rules for each player.

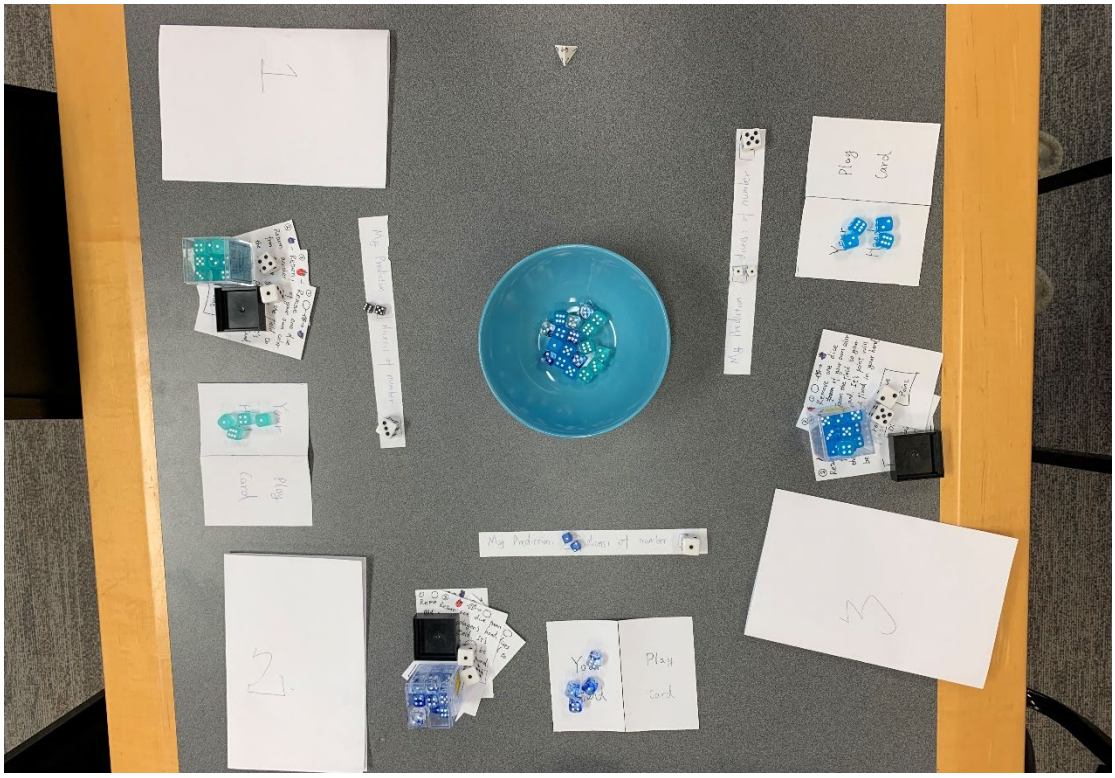
c) Zones: **Game zone** is divided into two parts: **Shared Zone**, and **Player's Zone**. The **Shared Zone** is divided into **Field Zone (Field)** and **Field Queue**. The **Field** locates at the center of the table, and the **Field Queue** is a small space next to the **Field**. The **Shared Zone** is shared by each player, while each player has their own **Player's Zone** (that means two **Player's Zone** in total). Each Player's Zone is divided into 5 parts: **Prediction Zone**, **Hand Zone (Hand)**, **Play-card Zone**, **Supportive Zone**, and **Score Zone**.



d) Dices: Dices in this game are either **Gaming Dices** or **Indicator Dices (Indicators)**. **Indicators** look different from **Gaming Dices**. **Gaming Dices** of different players are different in colors but the same in size (so two colors for two players). Each player has 36 (one box of) **Gaming Dices** and 5 **Indicators**. Each Gaming Dice can switch among 4 **Status**: in the **Shared Zone** (called a **Field Dice**), in the **Hand** (called a **Hand Dice**), in a **Score Zone** (called a **Score Dice**), or in a **Supportive Zone** (called a **Waiting Dice**). A **Gaming Dice** will switch its **Status** under certain conditions (**Field Dice** → **Hand Dice**, **Hand Dice** → **Field Dice**, **Field Dice** → **Score Dice**, Waiting Dice → Field Dice. Will be discussed by later rules). All dices are six-faced.

e) Stages: The game is round-based. Each **Round** has 5 **Stages**: **Prediction Stage**, **Rolling Stage**, **Card Stage**, **Execution Stage**, **Score Stage**.

f) Begin the Game: Each player has 4 **Hand Dices** in his **Hand Zone**, and 6 **Field Dices** in the shared **Field**. All other Gaming Dices are in the **Supportive Zones**. The 4 **Hand Dices** are rolled to randomly to generate their original points. The **Field** is a real bowl. Indicators are put in the Supportive Zone of each player. Each player has one **Partition**, one **Prediction Paper**, a **Gaming Paper** (to mark the Hand Zone and Play-card Zone of each player) and three **Cards** (Card①②③). The **Prediction Paper**, located in the **Prediction Zone**, is used to display players' predictions. The **Partition** and **Cards** are also in the **Supportive Zone**.



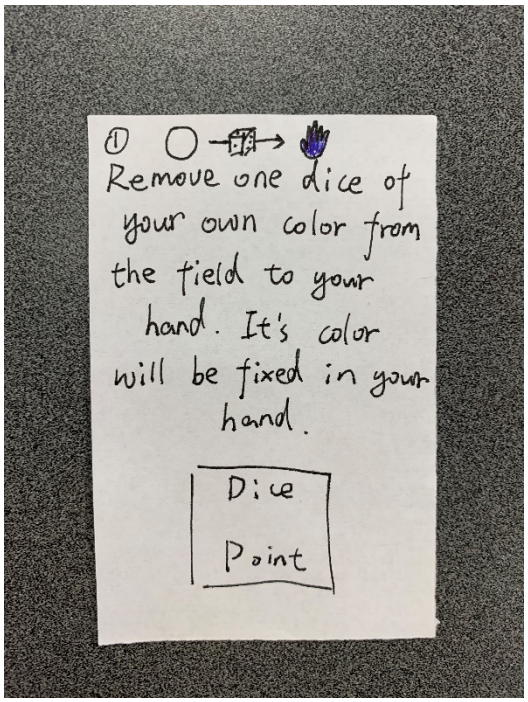
g) Prediction **Stage**: Each player erects his **Partition** to hide his **Prediction Zone** from others. Each player chooses a point 1~6 and predicts the amount of dices in that point in the next rolling results. Each player marks his prediction on the **Prediction Paper** using (up to 3) **Indicators**. After all players finish, they remove their **Partitions** together to display their predictions. Prediction Stage is the only stage that allows a player to manipulate his **Prediction Paper** or **Prediction Zone**.

h) Rolling **Stage**: Each player grabs his own all **Gaming Dices** in the **Field**. Both players roll their dices at the same time into the **Field**. Then put all the dices in the **Field Queue** into the **Field** without rotating them. Rolling Stage is the only stage that allows changing the points of **Gaming Dices**.

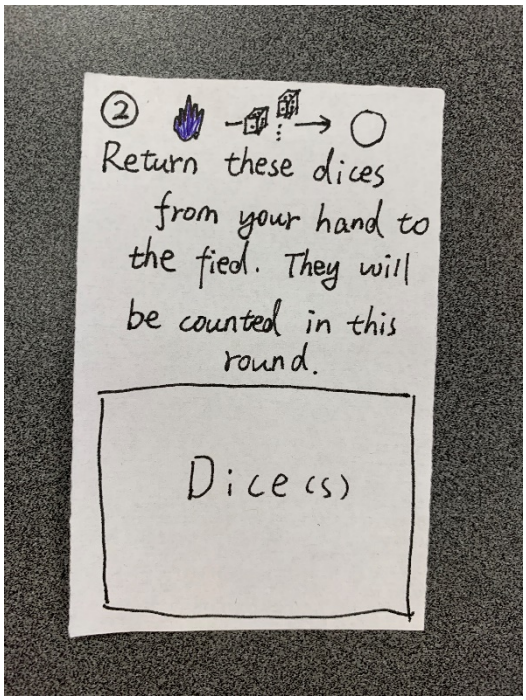
i) **Card** Stage: Each player erects his **Partition** to separate the [**Shared Zone** + **Prediction Zone** + Score Zone] and [Other **Player's Zones**]. Then each player can freely observe the situation. If needed, players can ask each other's **Hand Dices** points. (Hand Zone is blocked by the Partition, because playing the **Card**② needs to put some **Hand Dices** on it. But **Hand Dices** points are actually public to the other player.) Then the player can choose a **Card** to place it in his **Play-card Zone**. The **Cards** has instructions on them about how to put **Indicators** or **Hand Dices** on them. The player can also choose not playing any **Card** in this **Round**. After both players finish placing **Cards**, they remove the **Partitions** at the same time to display the **Play-card Zone**. **Card Stage** is the only stage that allows players to manipulate their **Play-card Zones**.

j) Execution **Stage**: The **Cards** that were played by players in the **Card Stage** take their effects.

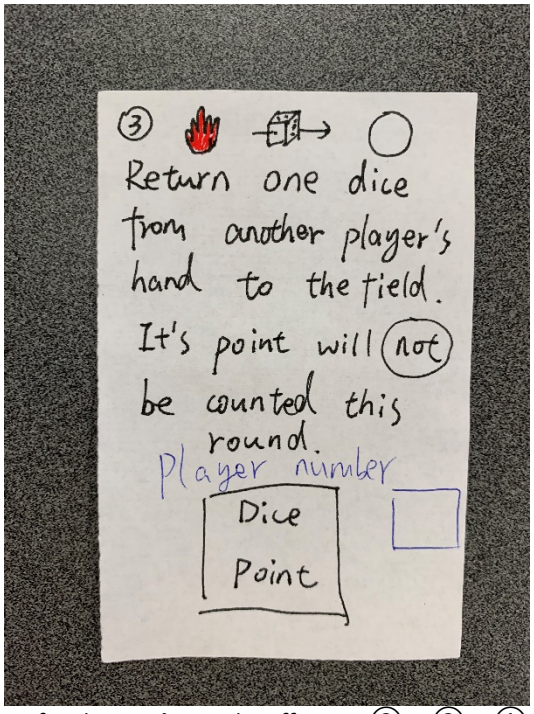
   i. **Card**①: Move one **Field Dice** of the player's own color to his **Hand** (it turns the **Field Dice** into a **Hand Dice**). The dice cannot rotate during this process. When the player plays this card, he need to put one **Indicator** on it to indicate the point of the dice he want to move. If there's no that number in his color in the **Field** or **Field Queue**, this card doesn't do anything.



ii. **Card②**: Move any amount of **Hand Dice(s)** from the player's **Hand** to the **Field** (it turns those **Hand Dices** into **Field Dices**). None of the dices can rotate during this process. When the player plays this card, he need to put the **Hand Dices** to move on the card.



iii. **Card③**: Move one **Hand Dice** of another player's **Hand** to the **Field Queue**. When playing this card, the player need to put two **Indicators** on the card to instruct both the dice's point and the player's index. If the player doesn't have a dice of that number in his **Hand**, this card doesn't do anything.



iv. The sequence for the **Cards** to take effects is ③→②→①.

k) End of the Game: After playing 6 rounds, roll the 4-faced dice to get the number of **Additional Rounds** to play. In Additional Rounds, Score Dices are put in a special position (Additional Score Zone) in the Score Zone. After playing all the Additional Rounds, count the Score Dices of every player. Each Score Dice in the Additional Score Zone weights 2 scores, others weight 1 scores. Whoever has the most scores wins.

l) Score **Stage**: Count the amounts of dices in the **Field** (**Field Queue** not included) of each point. Then, if any player's prediction is exactly correct, he takes all the dices in the **Field** of the point he made prediction of. (For example, Tom predicted 10 dices of the number 3 and it is correct, so he takes the 10 dices.) If two or more players made the same prediction and all correct, they divide the Score Dices, with the remaining of division removed from the game totally. These dices are removed from the **Field** and go to the **Score Zone** of the certain player. (It turns the **Field Dices** into **Score Dices**). Then, the same amount of each color's **Waiting Dices**, from the **Supportive Zones**, are put into the **Field**. (For example, the 10 dices taken by Tom contains 3 Tom's blue dices, 6 Jerry's red dices and 1 Anna's green dice. So Tom puts 3 of his blue **Waiting Dices**, Jerry puts 6 red and Anna puts 1 green into the **Field**/bowl.) (It turns **Waiting Dices** into **Field Dices**.) Then, if the amount of the number of all **Field Dices** are less than the number of players, the game ends, and whoever has the largest number of **Score Dices** in his **Score Zone** wins. Otherwise, do another **Round** of game.