

Dice Canyon Assignment

Haley Yang

Brainstorming

1. Map: A map with many squares (or other shapes) on it. Players roll dice in turn to move forward. The first one who reaches a certain place wins the game. [I don't really want to follow this idea, because this is what everyone knows.]
2. TCG: Using cards to bring about random events. I played *Hearthstone* these days so I tried to combine TCG with dice game. The core of this idea is having a champion for each player and minions. [I love card games so it became my first dice game, the *Three Kingdoms Fight*.]
3. The theme of the Three Kingdoms: Even it's not necessary to have stories, themes or pictures in a dice game, I prefer to make one that has a theme. I'm most familiar with the characters and stories of the Three Kingdoms in Chinese history. There are some existed games based on this period but I've never played a dice game themed in it. So I started designing one. [The *Three Kingdoms Fight*]
4. Flicking dice: Once during a playtest of others' dice game, I played with the dice and piled them up without thinking about anything. I realized that it can be fun and challenging to put dice on one another because they are easy to fall. Then I thought maybe I can design a game focusing on the action of flicking dice. [I like this so I designed the *Dice Fighting Game*.]
5. Using dice cases and even the instruction paper as props: I noticed that the cap of dice case looked different. Then I discovered that a cap can be attached to two cases with both sides and it's pretty steady. So the cap can be a separation between the two cases. And if there are not many dice in a case, the paper can help block the vision of the player sit with you face-to-face. So it can be a game that players guess points of each other's. [I like this so I used it in my second game, *Querying Dice Game*.]
6. Guess the points of dice: See above (#4). [Ditto.]



Prototypes

Based on the brainstorming, I designed three dice game prototypes. The one I chose to submit is the last one, [*Dice Fighting Game*](#).

Three Kingdoms Fight

A two-player dice game that has features of TCG and tabletop war games. Two players build their own decks with the warlord they choose before the game starts. All the rules can be explained with events or phenomena in real history.

Rules:

- Props:
2D8, 2D20, about 5 other random dice, 95 cards
- Flow:
 1. Preparations:
 - a. Pick a lord which indicates a kingdom. He starts with the health of 20.
 - b. Build your own card deck.
 2. Shuffle the deck of each player's.
 3. Each player draws 5 cards from your own deck.
 4. Decide who goes first.
 5. Two players take turn to do all of the following things:
 - a. Draw a card from your deck.
 - b. Roll 2D4 to define your capacity of this turn.
 - c. Play any cards that the total fee is no more than the capacity.
 - d. Use the skill of the generals on the battlefield each turn.
 - e. Use the skill of the warlord once in a game.
 - f. Attack the soldiers, the general or the lord of your opponent's.
 6. You win when the health of the warlord of your opponent's reaches 0.
- Other Rules:
 - Building a deck:
 1. How to build a deck? A deck contains at most 20 cards including 7 spell cards, 3 general cards and 10 soldier cards. (Minion contains general and soldier.)
 2. Which general can I add to this kingdom? Except the generals who belonged to this kingdom, you can also choose from the generals that contributed to more than one lord.
 - Minions:
 1. Minion contains general and soldier.
 2. Minions can't attack immediately, except Calvary.
 3. A minion dies when its health reaches 0.
 4. When a minion is under attack, it counters. The attacker takes damage equal to its attack.
 - States:
 1. Except getting points, dice can also be used to record the damage.
 2. Turn a minion 90° clockwise to show it has attacked this turn.
 3. Flip the warlord to show its skill was used in this game.
 - Others:
 1. How to eliminate the FastMoverAdvantage? The fast mover doesn't draw a card at the start of his first turn.

2. If a player runs out of his deck, shuffle the used cards and draw from it.

● Card list:

1. Warlords and Generals:

	The Kingdom of Wei		The Kingdom of Shu		The Kingdom of Wu		Neutral Forces	
Warlord	Cao Cao	Tyranny : D6>3→Destroy a friendly minion. Restore Health equal to its Health.	Liu Bei	Benevolence : D6>3→ Return a friendly minion from the battlefield to your hand.	Sun Quan	Equilibrium : D6>4→Swap at most 3 points between any Attack and Health of a minion.	张角	
General	Zhen Ji	Clairvoyance : Roll the capacity dice again.	Guan Yu	Martial Arts : D6>3→Destroy an enemy minion. D6≤3→Deal 1 damage to an enemy minion.	Lu Xun	Combo : When your minion kills another minion, D6>2→It gains another attack.	Diao Chan	Strife : Choose a minion. Deal damage equal to its attack to adjacent characters.
	Guo Jia	Brilliance : D6>3→Flip the Warlord.	Zhang Fei	Roar : D6>3→ Deal 3 damage to any enemy character.	Xiao Qiao	Beauty : D6>4→ Another character takes her coming damage.	Hua Tuo	Healing Hands : D6>3→Restore 3 Health.
	Dian Wei	Death Rattle : When Dian Wei is dying, D6>3→Deal 3 damage to all enemy characters.	Zhao Yun	Bravery : D6>3→ Deal 4 damage to enemy warlord.	Da Qiao	Allure : D6>3→Use Bribery to any character.	于吉	
	Sima Yi	Prodigy : 本回合内重掷一次伤害判定 Roll the attack dice again.	Zhulian	Astrology : Look at the top three cards in your deck. D6>4→Draw one and put the others under the deck. D6≤4→ Draw one and discard the others.	Sun Shaxiang	Marriage of State : 选择场上任何一名受伤的异性角色, D6>3 则各回复 2 点体力	吕布	
	贾诩 Jia Xu		Huangzhong	Sharpshooter : D6>1→Your Archer have +1 attack this turn.	周瑜			

2. Soldiers

	Fee/Attack/Health			Number	Skill	
Spearman	1	2	1	2	Piercing	Another enemy character takes extra damage.
	2	3	2	2		
	3	5	3	2		
	4	6	4	2		
	5	7	5	2		
Calvary	1	2	1	2	Charge	Can attack immediately.
	2	3	2	2		
	3	4	3	2		
	4	5	4	2		
	5	6	5	2		
Archer	1	2	1	2	Stealth	Can't be countered.
	2	4	2	2		
	3	5	3	2		
	4	6	4	2		
	5	8	5	2		

3. Spells

Spells	Description	Number
Arrowstorm	Deal 1 damage to all enemy minions.	2
Out of Thin Air	Draw two cards.	2
Brotherhood	Restore 1 Health to all friendly characters.	2
Bribery	$D6 \leq 4 \rightarrow$ The enemy character can't attack next turn.	2
Scapegoat	Choose an enemy minion. Deal damage equal to its attack to any character.	2
Pilfer	Take a random card from your opponent's hand	2
Impervious	When your opponent plays a spell, counter it.	2

● Analysis

1. Target players: This game is mainly designed for players who are interested in Chinese classic culture and the ones who like card games.
2. The advantages of the game: It's a combination of war, cards and dice. It can be interesting for players who like wars or history or Chinese culture. The game creates a close and reasonable relationship between warlords (who command his general and soldiers to fight), generals (who have special skills that can help in the battlefield) and skills that look like real cases in the history.
3. The biggest problem of this game: Balance is the biggest problem which requires endless iterations. I tested several times, feeling that warlords are killed quickly. However I don't want the game last too long. So maybe many changes on minions are needed. Also, there's not much cross correlation between the warlord and his generals. I should come up with skills that not only fit the history but also work well with others' skills.

Querying Dice Game

A two-player gambling game (no wagering real money) that you win when you query your opponent's dice and it's true.

- Props:

4D4, 4D6, 2D20, four dice cases with a piece of paper in each, 2 caps of dice cases

- Flow:

1. Each player rolls a dice set and a D20 (as the picture shows, the colors don't matter). The 2D20 defines a range.



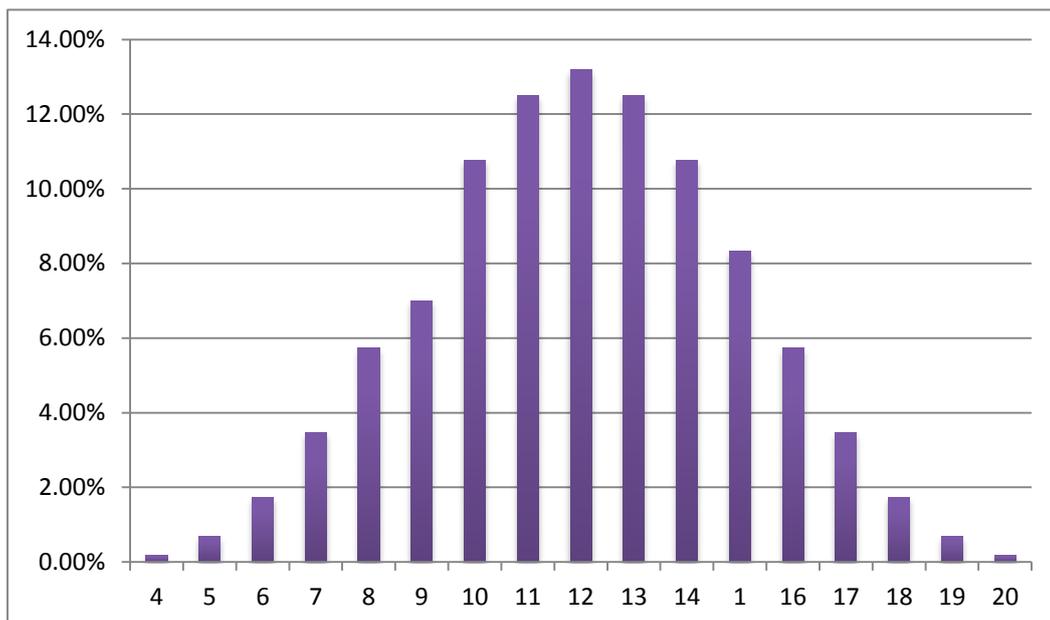
2. In a turn, a player has two movements, each of which can be:
 - a. Roll his dice set.
 - b. Roll anyone of a D20.
3. A player can query that the sum of opponent's dice is not in the current range. If he's right, he wins this game; or he loses.
4. If a player doesn't choose to query his opponent. Go to opponent's turn. (#2)

- Other Rules:

1. Always make sure your dice are covered by the paper.
2. The fast mover can't query in his first turn.
3. It's not allowed to query when both of the two D20 are below 4. (4,4 is acceptable.)
4. Why the dice set looks like this? The cap is just for fun and helps calculate fast.

- Analysis:

1. The chances of the points of a set of dice:



So the chance that the point is in [10, 14] is 59.7%. This game is the most popular one of my three games. It's pretty fun without knowing this. I haven't figured out what strategies can we have after knowing the statistics.

2. Pros:

- a. The game is simple and fun.
- b. People like guessing and gambling.
- c. Rolling dice holding the cap in the middle of two cases seems fun.

3. Cons:

- a. The game ends quickly (solvable, more rounds).
- b. There is chance that 2D20 get (4, 4), (20, 20) or other combinations with low chance. The player will probably query.
- c. The statistics of #1 might make it not that fun.

Dice Fighting Game (This is the one that I submitted)

A two-player game that flicking dice is its core gameplay.

Initial Set of Rules:

- Props:
 - 2 sets of 7-die (except D10) with their cases.
- Flow:
 1. Decide who goes first.
 2. In a turn, a player can choose one from the below:
 - a) Choose any dice (first dice can't be the D4) and roll it. Place it next to your existed dice.
 - b) (Adjust the positions of dice before attacking.) Flick one of your dice to attack your opponent's dice.
 - c) Pile a dice that has been rolled on the ones you had.
 3. The game ends when all the dice are in the battlefield. The player with a higher score wins the game.
- Other Rules:
 1. How to adjust the positions before attack? The center of your dice should be placed a certain distance to the center of your opponent's. (Use a dice case as the ruler.)
 2. For each player, more than four stacks of dice are not allowed in the battlefield.
 3. Choose from the below if any of your opponents' dice gets its biggest/smallest digit after an attack.
 - a) Your dice receive a shield (dice case) that will be removed after another attack.
 - b) You gain a bonus movement that can be used anytime.
 4. Number the dice in a stack from the bottom to the top: 1, 2, 3...
The score = $1 * \text{Point [1]} + 10 * \text{Point [2]} + 100 * \text{Point [3]} + \dots$

Playtest 1:

Youn Kim, 1st Feb. (Saturday) 13:00

Youn played with me for the first time but we didn't finish it. Because he was confused by the weird and complicated rules and proved to me that a dice case will not prevent the dice from being hit down, and if you pile more than 3 dice, dice cases become useless because the stack is too high.

Since the basic gameplay of the game is flicking dice, I felt it necessary to have the protection mechanism as a counterpoint. After some trials, I felt it's better to have other dice placed in front of the important stack of dice, because they can help reduce the force of impact. Because your opponent will try to attack from different directions, it better to have at least 3 dice as protectors. So it becomes a STG that requires players to array and lineup dice strategically. Then I realized that there would be many stacks of dice, if I calculate the score of every stack it will be time consuming. So I decide to allow players choosing one stack to calculate their scores.

New Set of Rules Based on Playtest 1 (underlined are the changes):

- Props:

Each player has a set of dice as follow:

1D4, 2D6, 2D8, 2D10, 2D12, 2D20

● Flow:

1. Decide who goes first.
2. In a turn, a player can choose one from the below:
 - a) Choose any dice except D4 and roll it. Place it on the battlefield.
 - b) (Adjust the positions of dice before attacking.) Flick one of your dice to attack your opponent's dice.
 - c) Pile a dice that has been rolled on the ones you had.
3. When both of the two players have ran out of their dice except the D4, they can roll their D4 and place it on the top of any stack.
4. The game ends when all the dice are in the battlefield. The player with a higher score wins the game.

● Other Rules:

1. How to adjust the positions before attack? As long as the distance is far enough that the two players are agree with.
2. You gain a bonus movement if any of your opponents' dice gets its biggest/smallest digit after an attack.
3. Number the dice in a stack from the bottom to the top: 1, 2, 3...
The score = $1 * \text{Point [1]} + 10 * \text{Point [2]} + 100 * \text{Point [3]} + \dots$

Playtest 2:

Yan Jin, 2nd Feb. (Sunday) 15:00

Yan played with me for about 3 times. To my surprise, he doesn't like flicking dice (and he explained that it's his own taste). So the first time, we followed my rules. While the second time, we got rid of the flicking. But we found that there remained too little interactions between two players if we can't destroy opponent's stack. So I think I should think up some rules that can control the flicking better.

Also, we found that it's confusing that rolling a dice and placing it are two different steps. So I combined the two steps.

And we felt there was no strategy at all how to place a dice. So I think maybe we can add a rule to limit the way that players pile dice.

New Set of Rules Based on Playtest 2 (underlined are the changes):

● Props:

Each player has a set of dice as follow:

1D4, 2D6, 2D8, 2D10, 2D12, 2D20

● Flow:

1. Decide who goes first.
2. In a turn, a player can choose one from the below:
 - a) Choose any dice except D4 and roll it. Put it anywhere on the battlefield. The dice on the top must be bigger than the ones under it.
 - b) (Adjust the positions of dice before attacking.) Flick one of your dice to attack your opponent's.
3. When both of the two players have ran out of their dice except the D4, they can roll their

D4 and place it on the top of any stack. Only the stack with the D4 matters to the final score.

4. The game ends when all the dice are in the battlefield. The player with a higher score wins the game.
- Other Rules:
1. How to adjust the positions before attack? As long as the distance is far enough that the two players are agree with.
 2. You gain a bonus movement if any of your opponents' dice gets its biggest/smallest digit after an attack. Use a dice to record the bonus movements.
 3. Number the dice in a stack from the bottom to the top: 1, 2, 3...
The score = 1*Point [1] + 10* Point [2] + 100* Point [3] + ...

Playtest 3:

Wei Shao, 2nd Feb. (Sunday), 18:30

Wei played with me for 3 times. He likes the flick very much. Both of us enjoyed attacking each other. So it turned out that the winner would always be the one who has more dice in the stack. It seemed that the points on each dice and my formula were useless. So I felt it necessary to limit the flick.

Also we discussed and tested using dice case as a shield. We agreed that it wasn't a good idea. He pointed out that maybe we can use other dice as shield to protect the important ones. We tried out some arrangement and agreed that this game had potential to be a strategy game that allows players have creative ways protecting their important dice.

New Set of Rules Based on Playtest 3 (underlined are the changes):

- Props:
Each player has a set of dice as follow:
1D4, 2D6, 2D8, 2D10, 2D12, 2D20
 - Flow:
1. Decide who goes first.
 2. Two players choose, roll and place any dice (except D4) in turns. A dice can be placed anywhere on the battlefield. The one on the top must be bigger than the ones under it.
 3. When a player has placed all his dice except D4, he can roll and place D4 on any stack of dice.
 4. The player who has placed the D4 can attack in his next turn. (Adjust the positions of dice before attacking.) Choose a dice to flick and attack your opponent's. Each player can attack twice.
 5. After both of the two have attacked twice, the game ended. The final score of each player is the sum of all his dice in the stack with D4.

Playtest 4:

Peng Jing, Nafisa Rafa Baker, Emily Chang, 3rd Feb. (Monday), 20:00

Peng and Nafisa played my game once. They couldn't accept the complicated rules and laughed at the flicking dice. Emily agreed that it was a bit difficult to play. Although it wasn't very helpful, I realized that it was really hard to design a game for everyone. On the contrary they can accept my second game, *Querying Dice Game*. But I decided that the target audience of this

game would not be everyone. So I would keep working on modify the rules without deleting many things.

Since I didn't have much preference on which dice to have in this game and there were too many for each player, I decided to have a D10 as a timer that limit the turns of a game.

New Set of Rules Based on Playtest 3 (underlined are the changes):

- Props:

1D10: To count the turns.

Each player has a set of dice as follow: 1D4, 2D6, 2D8, 2D12, 2D20

- Flow:

1. Decide who goes first. Set the D10 to 0 as the timer.
2. Two players choose, roll and place any dice (except D4) in turns. A dice can be placed anywhere on the battlefield. ~~The one on the top must be bigger than the ones under it.~~ Flip the timer to add 1 at the end of a turn.
3. Players can attack anytime which also cost a turn. (Adjust the positions of dice before attacking.) Choose a dice to flick and attack your opponent's.
4. Each player should roll and place his D4 before the game ends.
5. The game ends when the timer reaches 9, the game ended. The final score of each player is the sum of all his dice in the stack with D4.

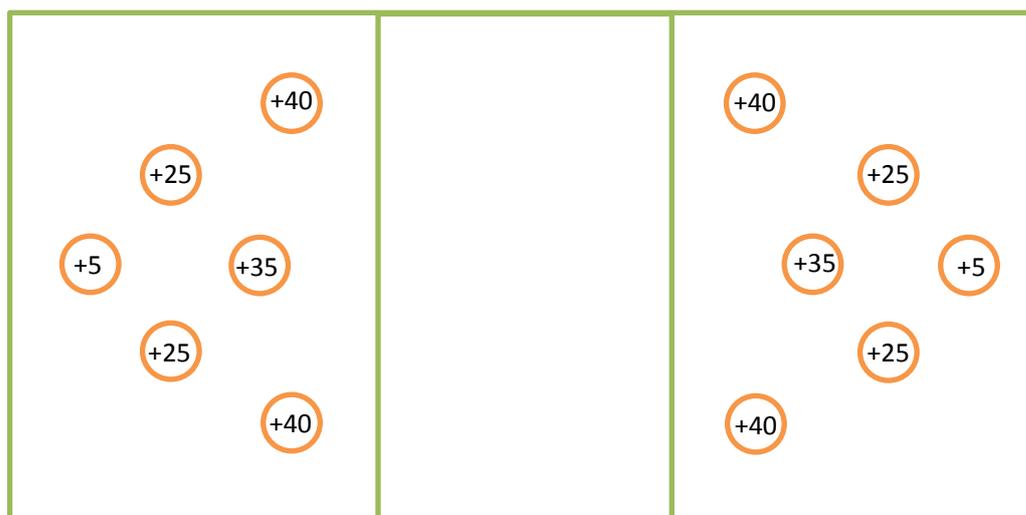
Playtest 5:

Mingxun Chong, 3rd Feb. (Monday), 21:00

CMX played this game for about 5 times. He really loves flicking dice. But he proved to me that no matter how I arrange and how many dice I put in front of the dice stack, he would always knock them down. And when we played this game, we always end with 0-0 tie. Because he would like to attack me whatever the cost is.

Also, I found that flipping timer is very boring and time consuming.

Below is the map I added to this game:



Playtest 6:

Wei Shao, 4th Feb. (Tuesday), 12:40

Before the Game Design class I ran a quick test with Wei. Basically it was for the map. My theory to score the spaces was the front roll should have higher score. However the score still

failed to make sense.

Playtest 7:

Mingxun Chong (with John Shields inspected), 4th Feb. (Tuesday), 13:10

CMX tested this game for about 3 times. He still enjoyed flicking dice. I was amazed that I was really lucky to have not lost any dice since they are always knocked down to the floor. John suggested that I should have something to prevent the dice being hit away. I agreed that the most interesting part, flicking was so hard to control and caused lots of problems. When I met John later after the test, I talked about testers feeling like some of them felt my game too complicated. He advised me to only have the essential rules and get rid of the not important ones in order to serve my target audience, which I think make sense.

Playtest 8:

Jesse Schell, 5th Feb. (Tuesday), 14:30

Jesse played this game with me. He kind of likes the flicking idea and thought that picking a stack as the final score is new. We discussed about the problem of the present rules, including choosing dice to place requires no strategies, casting dice one by one seems meaningless, being not clear how many turns and when can players flick dice, and points on dice seem to be less useful. He gave me a bunch of suggestions such as letting two players not able to see each other's dice when choosing one to roll and place, marking scores out of the space so that players can see them when dice is placed on it, and using stars to mark certain spaces only when placed on them can a player flick. I also showed him my idea of having protection mechanism and I tried to use dice cases to do it. He said that was possible and he also agreed to my conclusion that they are not stable enough. Then he said I might need to stick them to the map. Jesse provided lots of new thinking which inspired me a lot.

Then Wei talked to me. We figured out that we should simplify the calculation of score, and maybe we can merely have 3 levels of calculation, that is, the dice in the front row *3, the middle row *2, the farthest *1.

After the playtest and thinking during the game design class, I felt that maybe I should try some new directions and I can still have the flicking and picking a stack in the new versions, while the game can look completely different from the initial one.

Playtest 9:

Lei Yang (my classmate in college who is currently studying Computer Graphics and Game Technology at University of Pennsylvania), 7th Feb. (Friday), 20:00

Honestly I wasn't sure about which direction to go with. So she tested with me following different versions. She also enjoys flicking dice to destroy my stack. In order to make the gameplay shorter, I run the test with each player has fewer dice which contain D4, D6, D8, D10, D12, D20.

In the last as well as a playable version of the game, we got rid of the D4 & picking a stack, which I think was an interesting point. However the protection mechanism is not that important for players enjoy flicking and the game pace should be fast as I observed.

Playtest 10:

Sirong Chen, Mengjie Xia (my roommates who are currently eBusiness students of CMU), 8th Feb. (Saturday), 21:00

My roommates playtested my game twice. Sirong was pretty good at flicking dice. Both of them showed strong interests in flicking dice. I felt it necessary to have something that prevent the dice from flying everywhere.

New Set of Rules Based on Playtest 3 (underlined are the changes):

- Props:

Each player has a set of dice as follow: 1D4, 1D6, 1D8, 1D10, 1D12, 1D20

- Flow:

1. Decide who goes first.
2. Two players roll all the dice at the same time.
3. Players take turn to do any one of the three things: placing a dice on the battlefield (can be anywhere), flicking to attack or moving a dice. Only the dice put on the space with a star can used to attack.
4. If the stack with D4 is knocked down, D4 won't be removed from the game and the player can move it to anywhere else with its new point. Moving D4 doesn't cost a turn, while placing it on the battlefield at the beginning costs a turn.
5. The game ends when all the dice are either on the battlefield or in the tomb and both of the two players can't attack without moving dice to reach a star.
6. The player with a higher final score wins the game.

- Other Rules:

1. Final score of a player = sum of all the dice multiply each of their weights in the stack with D4.

Number the dice in a stack from the bottom to the top: 1, 2, 3..

The score = sum of all the stacks (1*Point [1] + 2* Point [2] + 3* Point [3] + ...)

2. The dice which is used to attack will be removed from the game after the attack.
3. The dice which is moved or changes points will be removed from the game after being attacked.
4. The dice remain their new points if they fall when building a stack.
5. Players are allowed to use only one finger to flick dice.

Playtest 11:

Myself, 9th Feb. (Sunday), 20:00

I drew a new map and played with myself. Found that the new problem is having only 6 dice and flicking mechanic leaves players no chance to build stacks. I decided to add more dice rather than removing the building stacks mechanic.

Also, I thought that having circles on the map is sort of a restriction. Maybe I can get rid of the circles and only have some big areas with different score bonus. In this case, players can have more freedom and more potential strategies when placing dice.

In addition, I found a cover of my boots whose size was exactly the same as the map. And its lid has narrow borders that can effectively prevent dice from flying out without making flicking harder. So I decided to use it as the board of the map.

Playtest 12:

Mingxun Chong , Yuxi Zhang, Wei Shao, Yan Jin, 10th Feb. (Monday), 20:30

When CMX played with me, we first tried one set dice then 2 set. We all agree that 2 set of dice work better than one set.

Yuxi tested this game with me. We felt that moving dice or roll a dice again in later game not meaningful. So I deleted the two choices in further version.

Wei Shao: During the test, we found that there weren't any obvious first order optimal strategies that players can figure out immediately. In fact, it was really hard to reach such a strategy after iterating and thinking for long. So I reversed the '*1/*2/*3' score bonus. In this case, players are likely to build stacks in the back row where they get '*3' bonus. After a few tests, we found that it made players actions not aimless and more meaningful.

Yan Jin: I played with Yan. He found an efficient way to protect the chosen stack from being knocked down. We tested many times and every time it worked. Also because of other cases, we observed that the '*1' and '*2' areas are not very useful in this game, that is, players will always put their dice in '*3' area after the last change. So I deleted the '*1', only define '*3' area as valid for final score (I call it 'Score area' and of course, no longer '*3' anymore.). In order to counter his extreme strategy, I narrowed the width of the score area to about one dice' width.

Wei Shao: We playtested several times, feeling the former part of the game, placing dice lacks interactions between the two players and rolling all the dice at the very beginning makes the game no suspense afterwards. So I decided to change the rule as: players take turn to pick a dice, roll and place it. Still, if they want to build a stack, the dice with bigger points should be on the bigger ones.

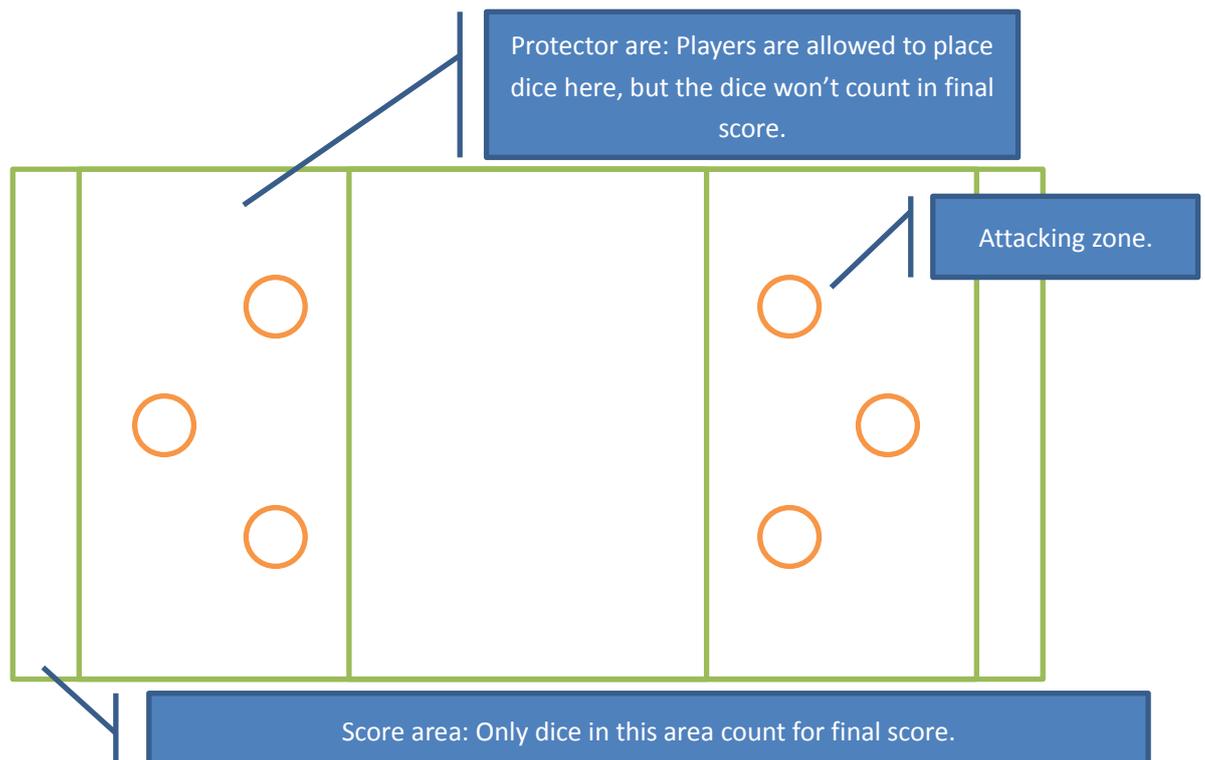
Although I like that players can pick a stack to calculate his final score, the D4 seems not that useful to the game. We discussed about the pros and cons of D4. D4 is light, so it's neither a good tool to protect nor a good attacker. I think D4 is unique because its shape doesn't allow other dice to be on placed on it and it has the smallest max point. Based on this analysis, I changed the rules about D4.

Final set of Rules:

- Props:

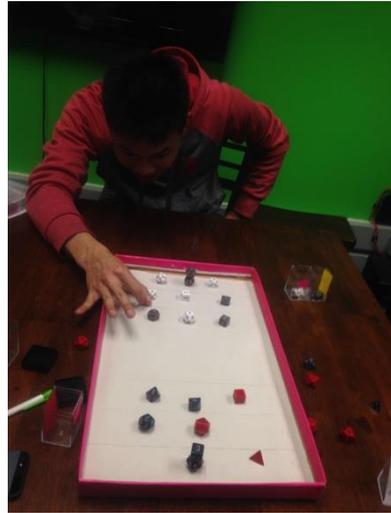
Each player has dice as follow: 1D4, 2D6, 2D8, 2D10, 2D12, 2D20

A board with thin borders on four sides, also with a map on it:



- Flow:

1. Decide who goes first.
 2. Two players take turns to do one of the three things:
 - a. Pick a dice which is not dead (except D4), roll and place it on the battlefield.
 - b. Flick a dice on the attacking zone. (No dice will be able to put on this attacking zone again, unless the player rolls D4 and gets a 3.)
 - c. Roll D4, according to the point, do different things.
 - I. 1→Do nothing.
 - II. 2→Revive a dead dice to the game, roll and place it on the battlefield right now. (If there's no dead dice, do nothing.)
 - III. 3→Revive a used attacking zone, roll a dice which hasn't been placed on the battlefield (but is not dead) and place it on a dead attacking zone. (If there's no undead dice out of the battlefield or no used attacking zone, do nothing.)
 - IV. 4→Choose one of your opponent's stacks and put your D4 on it, which disables that stack. (After this, the player can't use D4 anymore.)
 3. The game ends when all the dice are either on the battlefield or in the tomb and both of the two players use up their attacking chances.
 4. The player with a higher final score wins the game.
- Other Rules:
 1. Final score of a player = sum of all the dice multiply each of their weights in the score area. (Weights of a dice range from 1)
 2. The dice which is used to attack will be move to the tomb after the attack.
 3. The dice which moves or changes points will be move to the tomb after being attacked.
 4. The dice remain their current points if they fall when building a stack.
 5. Players are allowed to use only one finger to flick dice.



An estimate of what this game would sell for in retail, if it were mass produced. Explain what you base this on.

This game would sell for the fast pace of flicking dice mechanic and possibilities of various strategies in retail. Since rolling D4 can happen almost anytime during the game, it provides lots of uncertainty and fun. The target players of this game are people who are interested in flicking dice or building stacks with dice.

The price of this game will be around \$30.00. It contains 2 set of dice in two different colors, an instruction sheet and a board with the on it. Each set comprises 1D4, 2D6, 2D8, 2D10, 2D12, and 2D20. The board can be made of thin wood which can keep the map flat and stable when players flick or pile up dice. The board can be part of the pack of the game since it needs borders

on each side, and the map will be printed inside.

In addition, it's possible to include other maps which call for a little change on strategies, or some extra pieces of paper with some reference lines on them which allow players to draw their own maps. Because during the iterations, I found that maybe there's not a best map for this game and each version has different bias. For instance, players who extremely love flicking dice might think 3 attacking zones are not enough, so they can have more. Or maybe some players purely enjoy building stacks and challenging new higher, also they hope to see the opponent's stacks fall down when they are building it. Then they can have smaller space that allows them to place dice. In this case, players won't feel bored playing on exactly one map. And maybe other maps can inspire them of new strategies.

What Else I Feel Is Relevant

What I learnt from the iterations:

- You should always tell players everything before you start a game with him no matter how complicated the game is. Because if you try to explain the game with a demonstration or a trial, they might feel that you are adding new rules during the game...
- If you want to use rolling a dice to decide whom to go first, pick the D20 rather than D4. It has lower chance to meet an equal...
- It's much harder to simplify a game than adding rules to it.
- Be careful when design a game that has dice and cards at the same time. Because drawing cards is already a random event.