

How to Become a Better Parent

Team DEG

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Learning Goals

Original Learning Goals

Players will

1. Develop parental communication skills, avoid confusion & misunderstanding
2. Learn to monitor the physical and mental well being of a child
3. Learn appropriate methods to cultivate child without over-indulgence or negligence
4. Understand the importance of working alongside one's child and ways to offer support
5. Ensure conflicts with one's children are resolved efficiently and in time
6. Comprehend the importance of family traditions
7. Understand the influence of family elders for younger generations

Knowledge Elicitation

We used both qualitative and quantitative methods and looked into the literature to understand the problems, misconceptions, or confusions that parents may have during their communication with children, which would then be the target or learning objectives of our game.

Parenting Literature

We looked at some existing literature and curriculum solutions on parenting practices¹, and we've found the recurring themes of perspective, communication, observation, and guidance. In order to specify our learning objectives and learning tasks customized to our target population of Chinese novice parents, we further conducted semi-structured interviews on experienced and novice Chinese parents.

Interviews with Parents

We recruited and conducted semi-structured interviews² with four parents with a mixed level of parenting experience. We discovered some main problems that both experienced and novice parents have, including the lack of awareness and ability to, or the confusion about how to

¹ For an annotated list of literature that we looked at, please refer to Design Journal -> Ideation & Notes -> Christina -> 04/07 Parenting Styles & Practices Psychological Research
https://docs.google.com/document/d/1mNlyxeuCtB4k97qG_otBhTWL-7-NApEsaeMmKtr0Q-0/edit#

² For the full list of interview questions & summaries, please refer to this document:
<https://docs.google.com/document/d/1hLwlwdn6RYm-OvAfxtVD5pxo5tAl1xNReq9u9XMquas/edit#>

1. Take children's perspectives, and avoid comparing their child to other children
2. Understand the underlying reason for children's behaviors unless explicitly prompted
3. Build a safe, equal, and respectful environment to foster effective communication
4. Build a more equitable relationship where the children's ideas are respected and rules are set and monitored together, instead of enforcing their children to accept decisions
5. Give concrete guidance to children when it's beyond the stage of persuasion

To validate these observations from parents and double-check their influence on children, we sent out surveys to collect information from children's perspectives.

Surveys with Children

We've collected 34 responses³ (mean age: 23.9, median age: 21) from a survey⁴ asking individuals to recall their experiences of interacting with their parents. The survey results confirmed the importance of our educational goals and backed up the focus of our story and tasks (more details in the Task Identification section):



Children can be upset if parents don't keep up their promises, which is unfortunately a common thing

Children may experience difficulties transferring to a new school, adapting to a unfamiliar environment

Children may be significantly influenced by bullying events, whether this happen to them or not

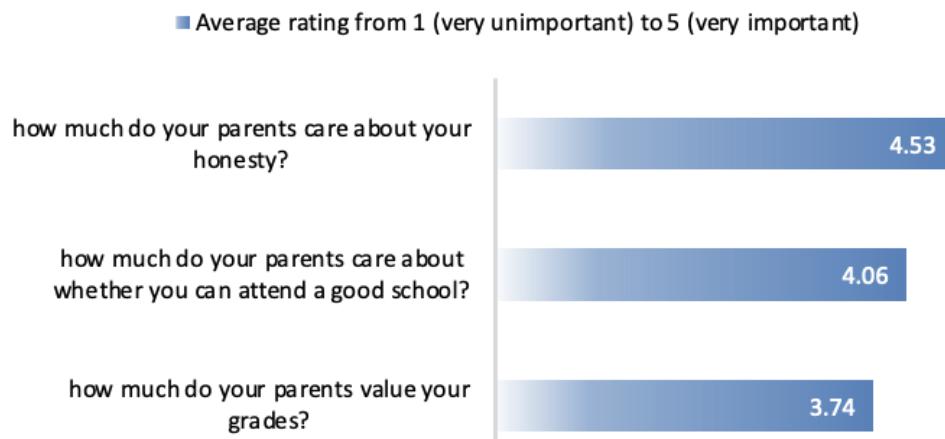
Children feel like parents can best help them if they adopt supportive and appropriate strategies

³ The google translated version of the survey responses:

https://docs.google.com/spreadsheets/d/1OLgCYieACMsSajJpTH_4X4aH-VAbuSJD/edit

⁴ The Chinese and English survey questions: Design Journal -> Meeting Minutes & To-Dos -> Saturday 04/17 9AM-12PM EST -> Survey Question & Responses on children's perspective:

https://docs.google.com/document/d/1mNlyxeuCtB4k97qG_otBhTWL-7-NApEsaeMmKtr0Q-0/edit#



Chinese parents value children's honesty, school quality, and children's academic achievement

Task Identification

Given all these observations collected from knowledge elicitation steps, now we want to identify the specific set of tasks that our players should improve on by playing the game. We used a competitive analysis to look at the learning tasks of other similar text-based educational games, and we also consulted with peers from this class regarding what we can focus on.

Competitive Analysis

We looked into two text-based parenting games⁵. Both games focused more on gamification and did not say much on the education side, such as feedback giving and learning evaluation, especially when the players can make choices without facing any consequences.

Regarding the learning tasks, the Parenting Simulator⁶ is a choose-your-own-adventure game with 60 scenes including potty training, bullies, and driving test from birth to high school graduation, and it focuses on identifying the player's parenting style and making them a role model for their child, such as self vs. sacrifice, freedom vs. structured, independence vs. closeness, etc. Another game, Parenting in a Pandemic Simulator⁷, focuses on a day in the life of a parent of young children during the pandemic.

Our planned narrative and learning tasks were quite unique, as neither of the above games specifically target at a parent with a single child who is a high school teen or a Chinese cultural background and common mistakes that Chinese parents may make (such as comparing their child to a "neighbor's kid" who aces at everything, violating child's privacy by peeking at their

⁵ For the full competitive analysis, please refer to this document:

<https://docs.google.com/document/d/1FhXvhAiZD4G13MDOsor0GwoVVnOrQvhXn7WULJ7ra1o/edit>

⁶ The Parenting Simulator, <https://www.choiceofgames.com/user-contributed/parenting-simulator/>

⁷ The parenting in a Pandemic Simulator, <https://www.almostfavorite.com/pips>

diary, ignoring children's voice in decision making), nor did them deal with a school transfer issue and a school bullying where the child may have done something wrong as well.

Peer Feedback

We also draw inspirations of learning tasks from our peer feedback during the check-in presentations⁸. Some new tasks such as learning parent partnership in making decisions, talking about big topics (such as honesty), school bullying, monitoring children's mental health, and etc. were added based on valuable inputs were provided regarding the following questions:

- What might be some scenarios that parents need to be trained for?
 - What might be something about parent education that you'd like to know?
 - What are some functionalities (other than chat) that you think necessary for our game?
 - Anything else you want to see in our game?



Categories of Tasks

We used the results from the knowledge elicitation, competitive analysis, and peer feedback to delineate our set of learning tasks. We focused on the following four main categories of learning objectives in our game to set the parenting practice tasks, or the educational opportunities:

1. [Perspective] Respect and take perspectives of children
 2. [Communication] Provide a safe environment for effective parent-child communication in collaboration with the partner
 3. [Observation] Monitor children's abnormal behaviors and mental well-being
 4. [Guidance] Provide appropriate help and situational feedback to children

⁸ Design Journal -> Meeting Minutes & To-Dos -> Feedback from the audience:
https://docs.google.com/document/d/1mNlyxeuCtB4k97qG_otBhTWL-7-NapEsaeMmKtr0Q-0/edit#

Final Goals

There are two formats of our final learning goals, one is by the conceptual, procedural, and dispositional breakdown⁹, and a new one is put as a list of dos and don'ts¹⁰, divided by our four task categories of perspective, communication, observation and guidance. This provides a specific and actionable checklist that can be incorporated into the game.

[Perspective] Respect and take perspectives of children

- Do:
 - Taking the perspectives of the children to understand and respect their behaviors, decisions, and ways of thinking
- Don't:
 - Not trying to understand the underlying cause of children's behaviors, but judging children's actions and decisions using pre-existing assumptions
 - Making decisions "for children's own good" but not respecting their own opinions or decisions

[Communication] Provide a safe environment for effective parent-child communication in collaboration with the partner

- Do:
 - Creating a safe, equal, and respectful environment for parental-child interaction, where children feel respected, understood, and accepted
 - Having candid and calm conversations, resolving conflicts with children
 - Being an active listener, being patient, and respectful in conversations
 - Expressing love, trust, and support without spoiling children
 - Collaborating with the partner about your ways to educate and talk with your children, monitoring each other during parental-child communications to correct other's mistake in time
- Don't:
 - Ignoring ideas that children expressed
 - Overly or blindly blaming or commanding children
 - Confirm your partner's mistake in parental-child communications

⁹ The old learning goal document by conceptual, procedural, and dispositional categories
https://docs.google.com/document/d/1-6aGxQahsS6e_4yyUKnSxRqeQW2EPsN6FHqq4CZYwck/edit

¹⁰ A handout of Parenting Dos and Don'ts including both English and Chinese versions:
<https://docs.google.com/document/d/1GJb7xMyuAn4EixDZJqHjECTi6pqjGF47N45b03M7Ld8/edit>

- E.g., let your partner continue to say things that hurt the child without stopping them and apologizing to the kid
 - Leave the job of parental-child communication to your partner alone

[Observation] Monitor children's abnormal behaviors and mental well-being

- Do:
 - Keenly observing children's abnormal behaviors and monitoring their mental health using clues from expressions or tones
- Don't:
 - Neglecting the abnormal behaviors of children, stressing and pushing children regardless of their mental states

[Guidance] Provide appropriate help and situational feedback to children

- Do:
 - Providing scaffolded and actionable guidance to help children solve their problems, control emotions, and etc.
 - Give detailed, actionable feedback to children while preserving an intimate relationship
- Don't:
 - Demanding actions or forcing children to reach a certain goal without giving enough, clear, or suitable scaffolding for children

Experience Goals

Original Experience Goals

We only had some rough ideas of experiences goals when we started our initial design, and two points stood out to us specifically.

We want the player to feel challenged when playing our game, as similar obstacles may be present during actual parenting, and we want them to feel a sense of pride when their efforts eventually paid off in the end. Our experience goals greatly developed alongside our game, and eventually included several more elements. However, the two initial ones remained critical.

Mechanics, Systems, and Gameplay Dynamics

Anticipated Interaction

Chat system

Most interactions the player makes will be in the form of making a reply by choosing one of the options provided in a chat screen to a variety of individuals. Depending on previous choices, some options may be made available or unavailable.

This is where players will spend a majority of their gameplay, sometimes getting frustrated by the dialogues that may be vague or conflicting. Like in real life, the players will have to spend a great deal of efforts figuring out the true meaning behind the words and the actual cause behind the appearance of some events. The amount of effort required is expected to evoke a sense of frustration and confusion, but the sense of satisfaction will also be triggered when they discover the true story under the clues or when the child thanks the parent and expresses trust and love.

Purchase system

In addition, the players must balance their family budget by managing a bank account and choose to pay for items that they consider important. As the deposit only recovers periodically, players will have to decide the most important items to purchase. The choices are designed to amuse the player and allow them to rest their minds during gameplay.

System Response

Feedback messages

A critical element of our game is the detailed feedback mechanism that provides tailored tips depending on the options that a player choosed, whenever they are related to an educational objective. Those immediate feedback messages of a parenting tip and intimacy score changes provide the user with an evaluation of their learning and a learning opportunity on the objectives.

Intimacy, Mental Health, and Employer's Satisfaction Scores

Another important aspect of our game is the implementation of intimacy scores, which have a breakdown into the perspective, communication, observation and guidance categories in alignment with the learning tasks. The intimacy scores serve as an evaluation of players' learning towards the objectives. There are also other less important meters, including the mental health and employer's satisfaction, which were planned to demonstrate the importance of balancing child care and other duties.

Learning Goal Incorporation

We design our narrative and the game dynamics around our learning goals, and we build rewards in the game if parents make the right choice (in alignment with the learning objectives), and punishment if parents do something undesirable. We incorporate these aspects by providing positive or negative feedback; for example, in the form of tips, intimacy scores, the actions and behaviors that the child will take, outcomes of the story, children's attitudes and tones in the following conversations, and etc.

The feedback tips¹¹ are all in the form below, where the tags are assigned based on the learning goal categories that this choice is in alignment with,

Tip [Perspective]/[Communication]/[Observation]/[Guidance]: Message (Intimacy +/- pts)

Some examples are as follows:

Tip [Perspective][Communication]: Respect the child's opinion and leave the decision making to the child (Intimacy +30)

Tip [Communication]: Accusations cut off the possibility of communication (intimacy -10)

Tip [Communication] [Observation]: Observe carefully, communicate actively, and work together with your child to solve them. (Intimacy +20)

Tip [Perspective] [Observation]: Don't just presume the reason, respect the child and learn to listen to them (Intimacy +5)

Perspective: Respect and take perspectives of children

The game makes use of a chat system to simulate parent child interaction; this prompts the players to infer what the child actually thinks by (literally) reading between the lines. In our story, the player character may often have conflicting views than those of the fictional child. When this happens, players must take a careful approach and remain supportive by understanding the child's perspective, both in terms of dialogue and actions choices. For example, if the parent chooses to break their promise and doesn't buy the child a new phone, their child would choose to steal the phone out of jealousy.

¹¹ The full set of tips feedback provided to the player can be found in our translated story document:
<https://docs.google.com/document/d/1ObwebZKvTuHcubwOoe4I1-7VnmHs0CBEJggglwH-SbQ/edit>

Additionally, players may have the option to access the child's diary, which is in violation of the child's privacy and a very disrespectful act from the children's perspective, so it would receive harsh punishments in intimacy scores (zero out).

Communication: Provide a safe environment for effective parent-child communication in collaboration with the partner

A vital part of our game design takes into account how to help facilitate communications between parent and child. Instead of having purely dialogue-based conversations, we choose to infuse multiple options for each choice in addition to making certain choices available depending on the effectiveness of previous communication, as indicated by the intimacy score.

For example, some options in a choice are intentionally made harsh and confrontational, and if players let their emotions take control and choose them, the intimacy scores will be decreased, and a tip would be provided to help players learn to adopt a calm way for communication.

Tip [Communication]: Don't let your emotions dominate the conversation (Intimacy -15)

Observation: Monitor children's abnormal behaviors and mental well-being

The observation element is infused into the storyline of our game, as the parent tries to figure out the reason for some weird changes in child behaviors, as hinted in the 3 clues in the story. Our storyline focuses on determination of the reason for recent erratic behaviors of the player's child, so it is critical that players remain vigilant of the changes of the child's mood expressed through words or actions.

For example, if the child tells lies, there will be more pauses or "....." in their lines. Also, if the player isn't sensitive enough to keep asking the child until they figure out the true story underlying the clues, their child may not confess and they may be too ignorant and the story ends up being miserable as the child would seek attention somewhere else, which is the bullier at school in our story.

Guidance: Provide appropriate help and situational feedback to children

Just supporting the child through words alone is not enough. Instead, the players will be asked to provide actionable steps for the child to follow in order to resolve an issue. Some choices made by the players take the form of guidance, as they offer advice and actionable steps to solve a current issue. Therefore, if players choose choices that only offer verbal confirmation without offering any steps for improvement, they may not receive the intimacy score increment regarding the guidance learning goal.

Tip [Guidance]: Help children improve self-control and give practical advice (Intimacy +30)

Final Goals

We designed our game with two types of experiential aesthetics in mind: **narrative** and **challenge**. We wished to tell a compelling story about the hardship of being a parent and efforts to help your child, and that's why players must put in significant efforts when communicating with their introverted child and decoding the clues leading to their suffering. As a result, we anticipate the following gameplayer experience:

Anxiety and frustration

The player will experience anxiety and confusion through the game, as their attempts to discover the truth behind their child's erratic behaviors are hindered in multiple directions. The introverted child lacks a sense of trust towards the player character, and other characters are quick to make assumptions that may mislead the player. Staying on course during using the **chat system** therefore requires a great deal of attention on the player's part. It would be expected that they face frequent setbacks that bring about frustration and anxiety, as in real life.

Confusion

The player will have to deal with confusion when playing the game, as the supporting characters mostly provide vague and sometimes inaccurate clues. The player will have to hold back their assumptions before gathering all pieces of the puzzle. Only then will the confusion be cleared and the full truth will be revealed.

Amusement

Although our game focuses on a serious topic, we do wish to allow the players to relax once by making use of a variety of complimentary game systems such as the in-game store to keep themselves entertained. Although the currency system limits what the player can buy, they will certainly feel spoiled by the number of choices they have.

Sense of achievement

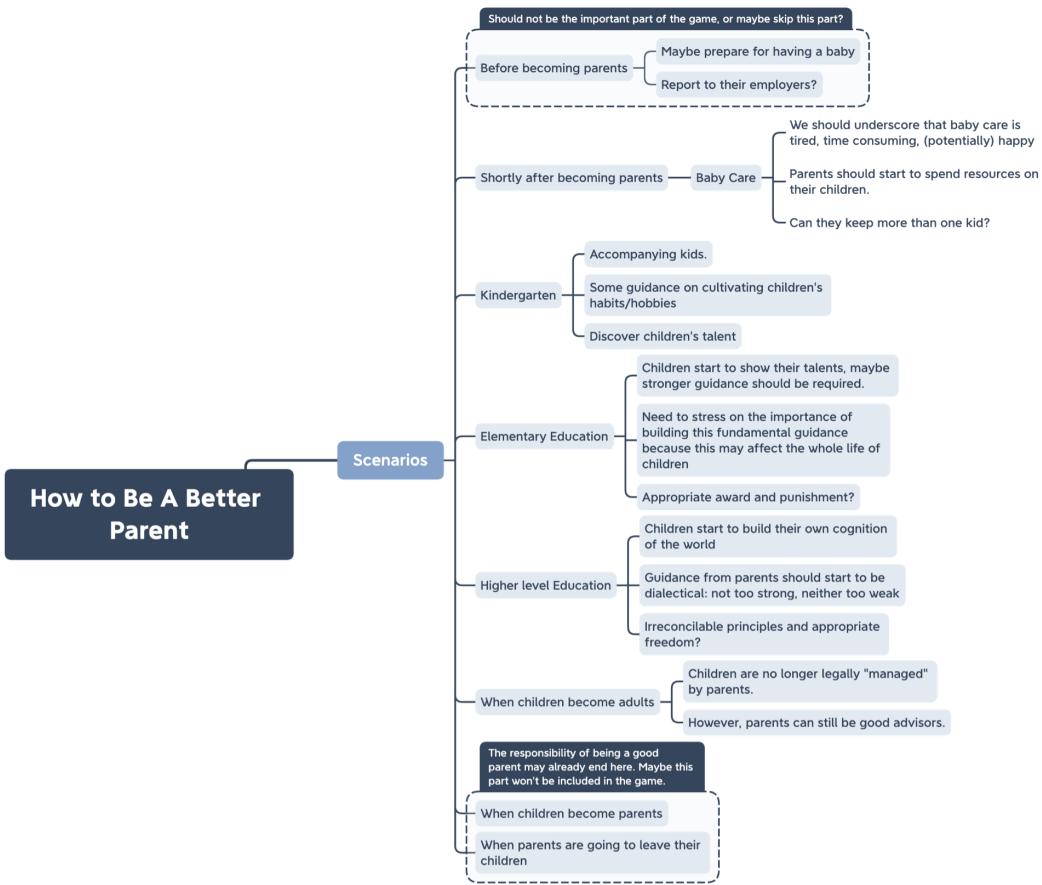
The player will work with a variety of individuals throughout the game, and achieving a good ending requires dedicated and consistent effort. As such, the players are expected to have a great sense of achievement after eventually resolving a serious issue, therefore preventing their child from making a horrible mistake.

Ideation/Prototyping

Brainstorming

At the very beginning of this project, we separated our brainstorming into several steps.

Before deciding the game genres, we brainstormed the subjects of parenting. Namely, we brainstormed about the scenarios parents actually will and should meet when they have children. The following flow chart describes the initial parenting scenario brainstorming.



We found that we did have a list of choices to make; therefore, from the scope of each scenario, we proposed 3 game genres:

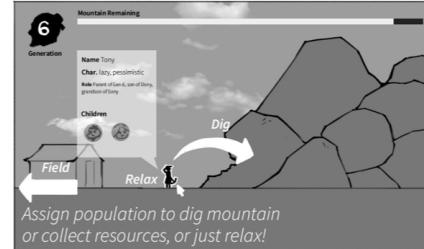
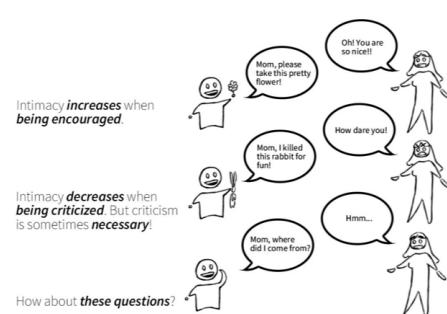
1. A digital strategic management game. In this game we have a foolish man who wants to remove the mountains in front of his house, however, manually, by excavating bit by bit¹². The old man definitely cannot finish this task in his lifetime, so he will have to breed his

¹² Please refer to the old Chinese fable for more cultural background:
https://en.wikipedia.org/wiki/The_Foolish_Old_Man_Removes_the_Mountains.

bloodline, so that his children and descendants can finish this task one day. In order to make sure of this, you will have to make sure that the parents of each generation educate their children well, so that they will follow their parents' instruction, and finally finish the job.

#1 The Old Man Removing the Mountains

- An old man decides to **remove the mountains** by manual excavation; if he fails, his children will continue.
- Start with the old foolish man, **breed your bloodline** to fulfill this goal.
- Set your **family rules** like children should not kill rabbits.

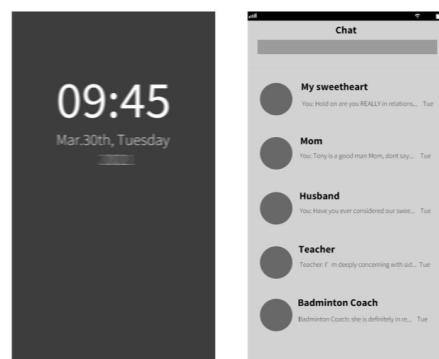
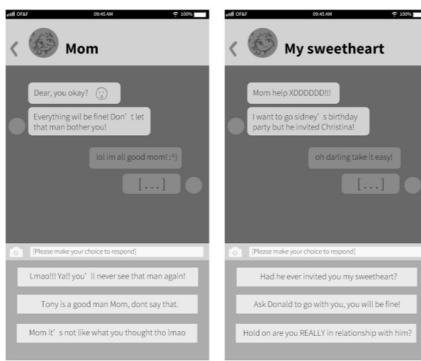


- Children do what the parents command when they have **a high intimacy** with the parents.
- **Listen to your children and adjust** when they make sense.
- Children come with questions. **Give them correct guidance! Do not spoil them!**
- Bad characters inherit. **Make long-term judgments!**

2. A chat simulating text adventure game. In this game, the players will be given an instant message simulator, where they will be able to initiate conversations or reply messages to their contacts. Through reading the story, the players will finally be able to understand how their choices may influence the ending of the story, and through this process, they will understand the advantages and disadvantages of different parenting styles.

#2 Chat Simulator

- Read the story we present by **chatting with the game characters!**
- You receive messages from **different people and time**.
- Make your choice and see **the different endings**, what make difference?



* You may experience time lapse when you finish a chapter of the story.

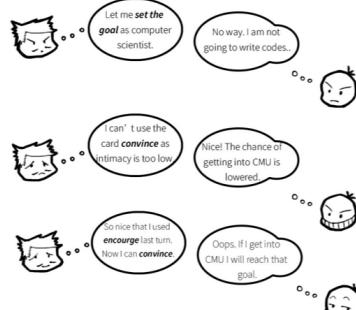
- Listen to your parents' advice. Give appropriate guidance to your children.
- **Solve some puzzles** when necessary.

Note: All the texts here are only for showing visual experience, and have no relationship with our final game narratives.

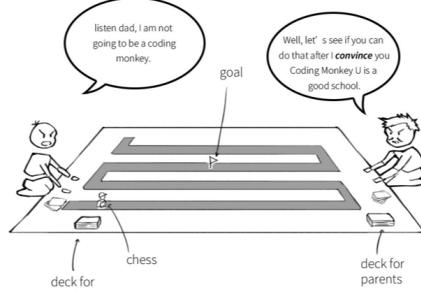
3. A tabletop card game. In this game, there will be 2 players, one as the children, the other as the parent. Each of them will set their own goals on the game board, and their goal is to move the child (chess) to their own destination. There are some variants of this game, for example, we may have several groups of parents and children, which allows in-group and ex-group competitions.

#3 Parents v.s. Children

- Zero sum **duo player** board game.
- Parent' s goal: move the children to the expected final state.
- Children' s goal: deviate from that state.



Parents can only affect children' s behavior under correct education strategies.



*Note: the final game board may look very different from this.

- Strategies for parent: use **appropriate education**(your cards) to guide the chess.
- Strategies for children: **understand and anticipate parent**.
- This will not be a verbal game. Strategies are specified as cards.

From peer review, most peers voted for the second and third, because the concept of setting "breeding bloodline" as the fundamental value seems to be somewhat out of context of parenting education. Our final decision is to polish the second one -- the chat simulator.

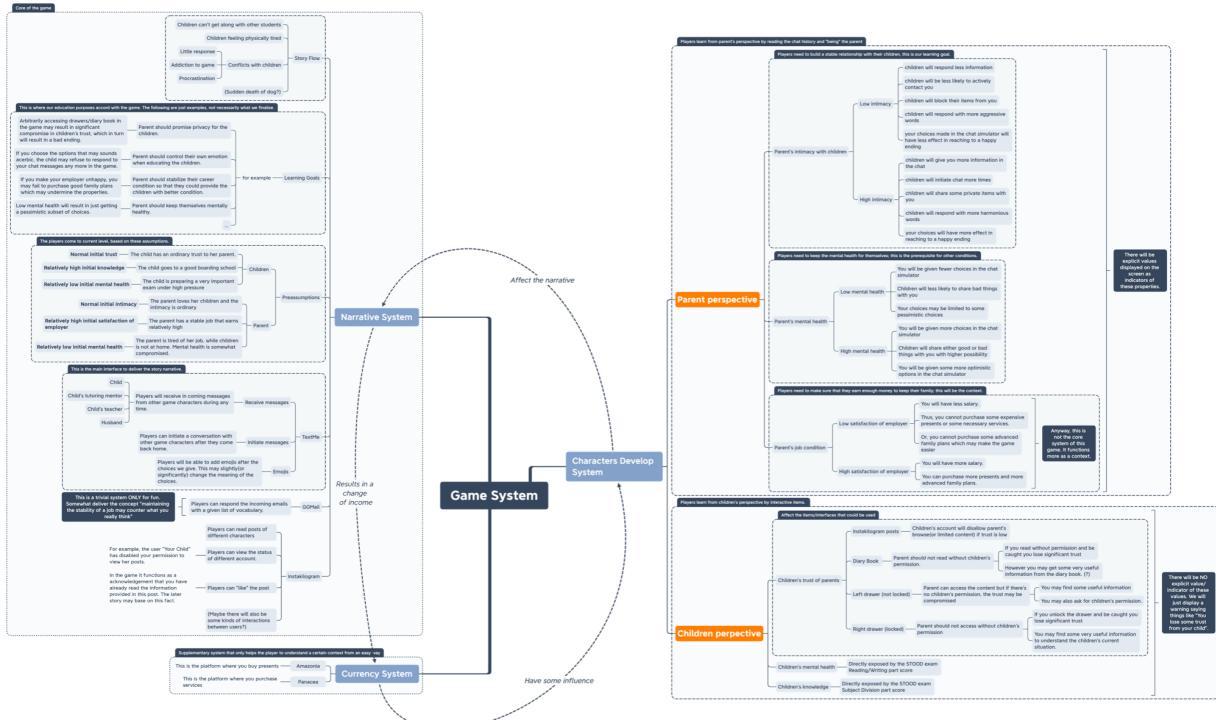
In order to make this game sound and complete as well as interesting, we start to brainstorm more about "how to make this game more gamey". The plain text adventure can be interesting if the story itself is strong -- however, it could also be very boring if this is ONLY a text adventure game. Therefore, we divided the further brainstorming into 2 parts:

Game brainstorming

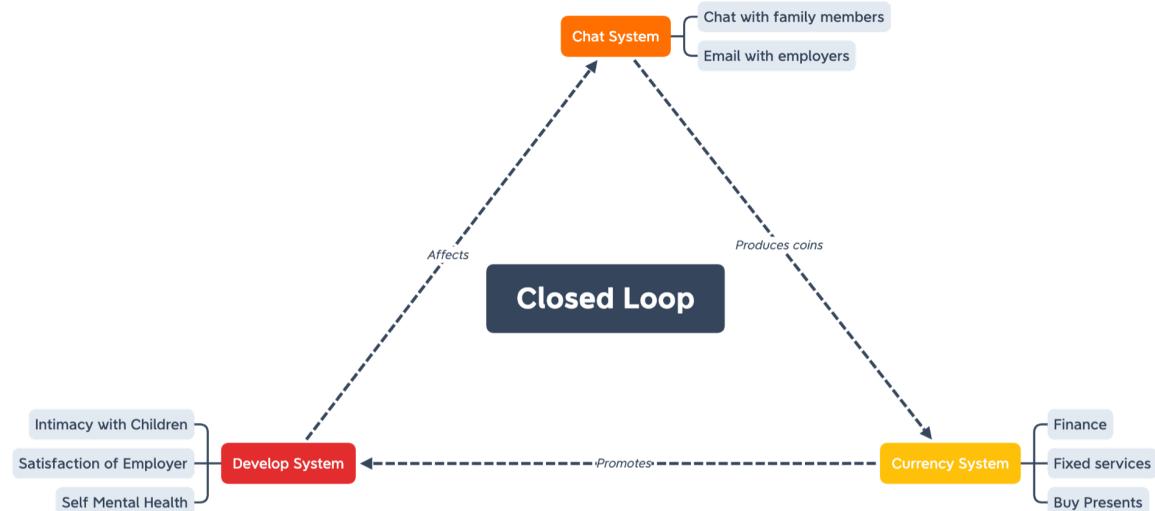
As just stated, making this game more interesting is a crucial task; players can find this game pretty boring, especially when they are not a fan of text adventure games. Therefore, we proceed with thinking about how each element of parenting skills/scenarios can become an element of the game. The following mindmap clearly states our brainstorming processes.

Design Educational Game (2021 Spring)

Final Game Project



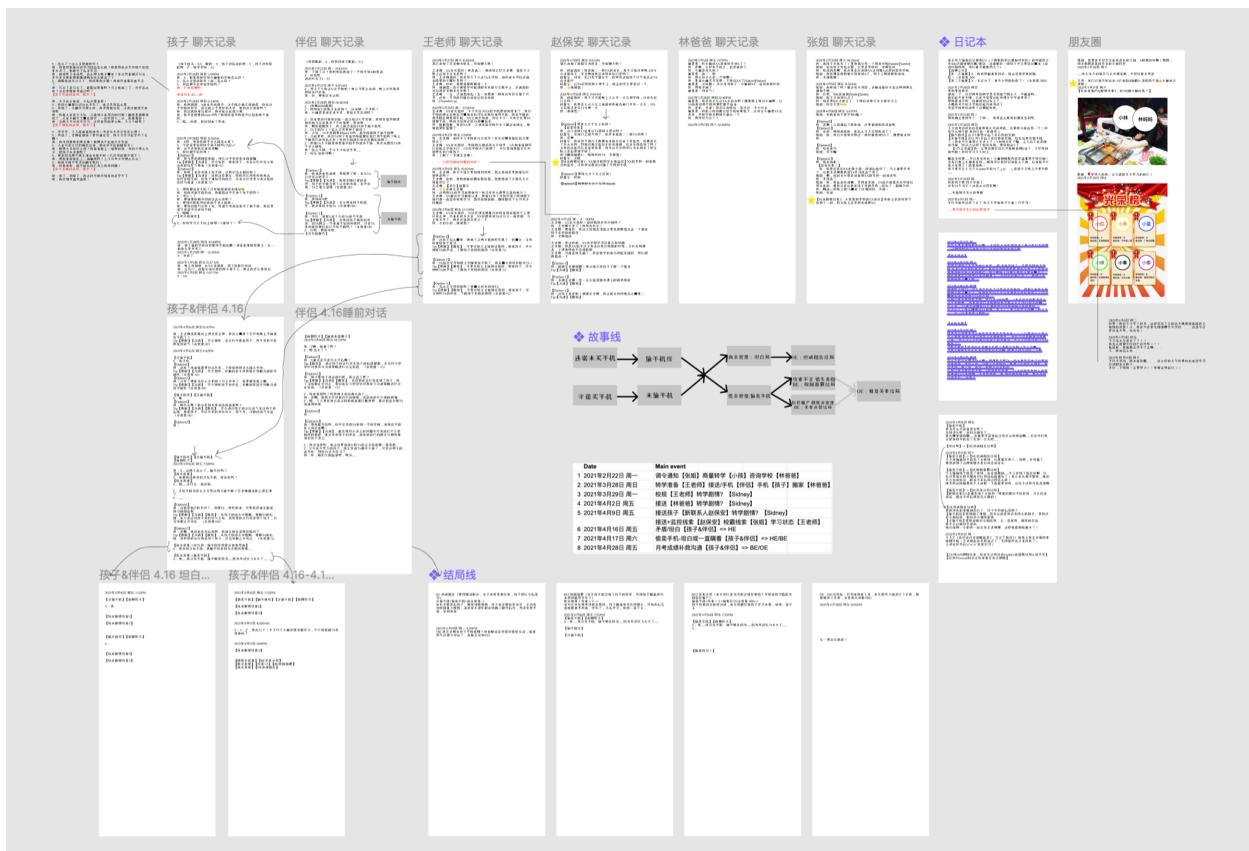
Namely, besides the narrative system (the chat simulators, the **chat system** in the below figure), we add some other tiny systems to aid the game performance. The **development system** allows the narrative of the story to have a more quantitative indicator. The **currency system** allows some more dynamic narrative development. Indeed, these 3 systems form a closed loop as the following shows:



Narrative brainstorming

We need a strong story to support our game, because this is the fundamental way for us to output our educational purposes. The earlier stages of narrative brainstorming exist as threads of thoughts in the design journal¹³, where the team members would simply look at the original learning goal and draw from their experiences to generate pieces of thoughts, starting from the different endings and two main conflicts in a Three-Act Structure design.

Originally we just want a moderately stressful environment where tension can be developed between the player parent and the child character, so we use a context of an upcoming test (the score of which was planned to be another way to provide feedback to the player), but we also wanted to implement a Three-Act Structure: the major challenge being the bullying event, and some small challenges in the first part, so we decided to make the player's child an introvert and let them transfer to a new school and encounter a new stressful environment, where conflicts could occur. The following figma flowchart shows our brainstorming process¹⁴.



¹³ Some earlier story brainstorming can be found under Design Journal -> Ideation & Notes -> Christina -> 04/15 & 04/17 & 04/22 Storyline:

https://docs.google.com/document/d/1mNlyxeuCtB4k97qG_otBhTWL-7-NApEsaeMmKtr0Q-0/edit#headin g=h.8ki35quddhkj

¹⁴ If you want to look into the Chinese version of this brainstorm, here's the link:

<https://www.figma.com/file/GmTZqbk7b0ERlwuqUU1niG/DEG-Storyline?node-id=0%3A1>

Initially we would like to make the exam score as a feedback of our game, but finally we discarded this suggestion because we don't have enough evidence for the relevance between higher exam scores and success parenting education. We also tried to sketch out the story outline by characters and dates¹⁵. Finally we dived into the story branches to design and polish the story, merging different branches back to the set of endings. This eventually completed our brainstorming part.

Prototyping

The prototyping process is also divided into 3 parts -- *narrative prototyping and testing*, *user interface prototyping*, and *programming prototyping and testing*. This is naturally decided because we are making a unity-based digital game.

Narrative prototyping

We begin with the narrative prototyping. In this part, our initial prototypes involve the process of setting endings, key transitions and some bonus clues. Our decision is to use the key transitions monitored by the intimacy value as the main switch for the endings.

Our first prototype¹⁶ involves 6 main characters: the player's kid, the player's partner, a friend (Alex) of the player who has a talented child, the kid's best friend (Riley) and his father; the teacher of the kids (Smith), a school security guard (James). The story main line is set as follows: the player hears from Alex that there's a chance to transfer to a better school, and the player makes the decision for the kid to transfer. The kid then meets different complicated situations at the new school (such as can't catch up with learning, can't get along with classmates, or being bullied at school by a character called Taylor), and the player is supposed to help the kid to handle them.

Since there is a significant gap between the programming progress and the story writing progress, the iteration of the narrative prototypes were pretty straightforward: we asked our testors to listen to what we said. We told them the story and the conversation between the characters, and gave them a bunch of choices, and then told them what will happen later after their decisions. The first iteration of the game was smoothly tested, and we made some updates after the playtesting.

From the feedback of the playtesting, we made some updates to our second prototype¹⁷. The playtesters suggested we make some modifications to the character settings: for example, transferring to a new school is usually impossible in China -- this is only possible if parents are moving to other cities. Thus, we finalized our game setting as the player transfers to a new city due to some business reasons. However, it would make nonsense that the kid's best friend also

¹⁵ The initial and updated characters and story outline in Chinese (feel free to use Google Translate):
<https://docs.google.com/spreadsheets/d/1z1jdRD7v--2EUerRzkDB4EBNuU-YESL6tGcFeSdVqUo/>

¹⁶ The Chinese version of our first narrative prototype (feel free to use Google Translate):
<https://docs.google.com/document/d/1Vcn3pF73kDnYzpyEKMaeBgDHhMaMyR5xwZ63fl6Tg1U/edit>

¹⁷ The Chinese version of our second narrative prototype (feel free to use Google Translate):
<https://docs.google.com/document/d/1OxFx-PMXYUnO77zYhK8xDVT8vNxjgv9LTaFD4eZmO0/edit>

goes to that school. Therefore, we finalize the setting of Riley as the kid's cousin, which makes his father the brother of the player. After some other polishing, the second iteration went more smoothly than the first one, and we decided to use that as our finalized game (more details in the narrative playtesting section).

Programming prototyping

This part is more subtle, especially when there are multi-thread conversations. In the first prototype, we made a prototype that supported multi-thread conversation: namely, the players can receive new messages while chatting with another character. The players can also talk to more than one character at the same time. The player may even quit the chat simulator and start to use some other softwares we implemented.

However, in the first iteration and playtesting rounds, we found that this could cause many problems. Due to the nature of multi-thread conversation, the players can decide the sequence of the received messages arbitrarily. This can be especially problematic when there's an underlying topological order in the conversation. If one character is telling some information that is supposed to be after another information, the player should not be able to switch between these two dialogs arbitrarily, otherwise there can be serious logical issues.

Therefore, in the second iteration, we removed the multi-thread support. In the second iteration, the conversations become linear: namely, the availability of another contact is set true after the end of current conversation. This indeed resolved the question of Byzantine failure of logic. However, this also significantly reduced the complexity of the story branching, because there will not be subtle branches that occur only because the sequence of information is changed.

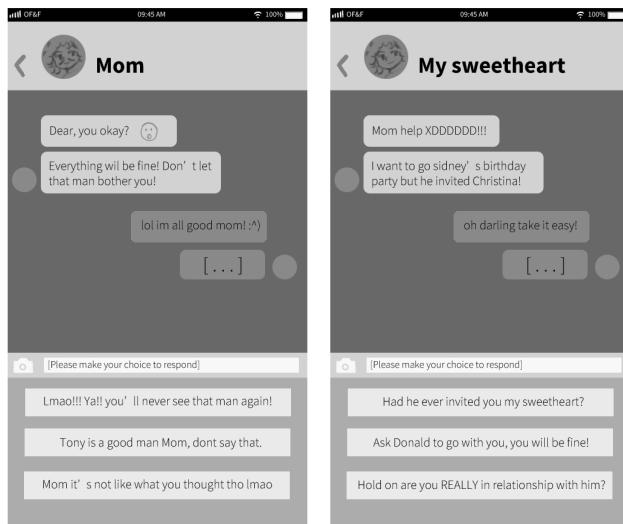
Starting from the second iteration, our prototypes involved game values such as intimacy, mental health and satisfaction of the employers. In the second iteration, we put some dummy values and some very flexible values for the story choices. We asked the testers to record the value change three times for each day: the first time they were asked to make the choices following their hearts (by masking the scores for each choices); the second time they were asked to choose rationally (by telling them which one is the optimal); the third time they were asked to always choose the worst choice in their mind (again, masking the scores). We made some calculations for the final decision as a threshold value of each key transition. In the second iteration, it is almost impossible to reach a happy ending, due to the dummy value setting. For example, our threshold setting for the kid to confess by him/herself was 1600 before the play testing, and we found that by the end of the play, the mean value is around 450. Therefore, for the final iteration, we set the threshold of this transition point as 500.

Our finalized prototype of the programming involves the robustness of UI interaction and we will elaborate in the next section. The game value setting and functions for each sub-systems (the chat simulators, the alibay bill-payment system, the amazonia purchasing system, and the game values) are exactly the same as our final game version.

User Interface Prototyping

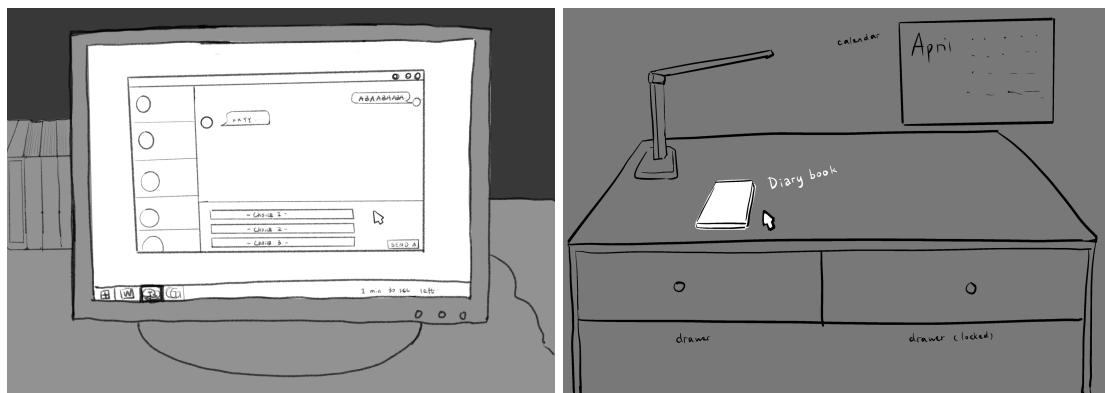
This is a supplementary process of this progress, and is not the key essential part of this game. We only observe the players to see if there are somewhere that are especially unclear and indirect, when they play.

The first iterations are pretty sketchy and drafty. We only drew some very trivial sketches and showed the testors the interface, to see if they are actually clicking on the elements we expected. Since there are many successful chatting softwares nowadays, this part is pretty easy and we could just simulate some well-known chatting app user interface. In our first iteration, we are using Facebook Messenger as a reference.



Chat simulator 1st iteration

Later on after we made the decision to make a PC game, we transplanted the interface to an office-like interface, and we added some other interfaces such as the children's room.



Chat simulator 2nd iteration with the children's room

By observing the simple interactions of the playtestors and taking notes on what they are looking for (for example, current status of different game values, the bgm loudness, the scene switches), we polished our finalized interfaces, by adding the status button, tip at the bottom, setting buttons on the top-right corner, and some scene switch buttons. These iterations are mainly done with figma and unity¹⁸. In order to render the game as a daily-life simulation, we referenced the game UI style of the famous PS4-only JRPG game, Persona 5¹⁹ for the UI basic style, and WeChat²⁰ for the message interface.



Chat simulator finalized iteration with the children's room

There are also some reflections on some of our decisions, so there could be further iterations in the future; we will discuss these reflections in the later Reflection section. In total, the feedback on the user-interface remained polarized: some players reflected that the UIs are especially direct and easy to use, while some players reflected that they are especially, inhumanly hard to follow. Former players tend to be seasoned players who have experienced a lot of different game UIs, while the latter players tend to be people that don't play games a lot. Thus, we definitely still have a huge space to refine UI.

Challenges

We met a significant number of challenges during the process of implementing this game. We will divide these into 2 parts, namely *storylines* and *programming*.

Storylines

Definitely the most important part of this game is to write a strong story. This is definitely a very difficult task, considering that we are ourselves not parents -- this will potentially create a very serious bias; in order to overcome this challenge, a bunch of surveys and interviews, along with the interviews we mentioned before, are distributed.

¹⁸ The English version of the finalized game user-interface:

<https://www.figma.com/file/2Q5aXYccl9vC0QB6Fc1NFw/?node-id=163%3A3>

There are some interfaces that are only supported in the Chinese version:

<https://www.figma.com/file/2Q5aXYccl9vC0QB6Fc1NFw/UI-for-How-To-Be-A-Good-Parent>

¹⁹ Persona 5 Royale official website, <https://atlus.com/p5r/>

²⁰ WeChat wikipedia, <https://en.wikipedia.org/wiki/WeChat>

The first difficulty comes when we need to decide the game targets. All of the game developers are neither native English speakers, nor westerners, which makes it difficult to build a solid story if we want to educate western parents. Therefore, our finalized targets are Chinese parents.

The second difficulty comes when we need to decide the topics. There are a lot of hot topics among parent-children interaction; for example, the children can be very young, as young as a baby; the children can also be a 20-year old university student. Our final decision is to build the story above the base of the college-entrance exam background. In China, this is viewed as one of the most important events that could happen during one's lifespan²¹. Under this assumption, the child is supposed to be very, very stressful, and therefore the parent's response could be very important and determining, which creates a good resource for us to create conflicts and difficult tasks.

The third difficulty comes when we need to decide the main challenges the players will meet. There were many topics that we can choose when we made the brainstorming:

We list some **possible factors** that may occur in this scenario, which will influence the complexity and depth of the current narrative.

1. Child falls in love with some other student at school.
 - Maybe homosexual? Maybe one sided?
2. Child is bullied by other students at school, or not getting along with other students.
 - Or, child bullied other students?
3. Child feels uncomfortable of his/her teacher(s).
4. Child meets racial discrimination at school.
5. Child feels physically really tired.
6. Child feels extremely hard on a specific subject (for example math).
7. Child distracted by some other students.
 - For example, friend A always invites your child to play digital games but A is the most important friend of your child.
8. Child has no idea of which university to apply, how to prepare... etc
9. Child addicts to video games.
10. Pet dog died during the preparation of the exam.
11. ...

And our final decision is to use "school bullying", "children's physically feeling bad" and "phone addiction" as the main challenges the players will meet. This already adds a considerable complexity to the game.

The fourth difficulty for us is to delineate the divergence and convergence of the storylines. This was pretty time-consuming and the possibilities exploded pretty fast. We first dragged a huge table to see what exactly could happen each day²². By choosing some of the days as the

²¹ For more related information to understand the importance of this exam, please refer to the wikipedia, especially the **psychological pressure** part: <https://en.wikipedia.org/wiki/Gaokao>

²² The Chinese version of this story outline by character and dates table:
<https://docs.google.com/spreadsheets/d/1z1jdRD7v--2EUerRzkDB4EBNuU-YESL6tGcFeSdVqUo/edit?usp=sharing>

key-transitions (where the player's decision will directly determine the ending of their story branch), we finally completed our narrative design using 3 bonus clues and 1 key transition, along with the intimacy value threshold, to control the story flow:

1. (Key Transition) If the player decides to buy the kid the phone he/she promises, the kid won't "steal" the phone of the other student, Taylor, who is a "bully" at school; otherwise, the kid will take Taylor's phone without asking for permission as he/she may feel jealous. In each case, the child may or may not confess, depending on the intimacy level. And if the child had taken the phone without permission, it would be harder (requires a higher intimacy score) for he/she to confess, which is implemented through the intimacy scores associated with the purchase of the phone.
2. (Bonus Clue 1) If the player decides to pick up the kid before 7:15pm on Apr. 16th, he/she will learn from the school guard that the kid has come to see the surveillance with another student.
3. (Bonus Clue 2) If the player decides to respond to Alex about the actual situation of the kid, he/she will learn from Alex that the kid is going along with the school bullyer.
4. (Bonus Clue 3) From the conversation with Lim on Apr. 17th, the player would learn that the child didn't actually have lunch with Riley.

The seemingly simple branching has already created enough combinations of storylines and possible conversations, since

1. Each clue can be discovered or not discovered,
2. The child may or may not touch the Taylor's phone,
 - a. For each case, the child may or may not confess
3. Depending on the day in which the child may confess (Apr. 16th or 17th when the child had sold their old phone for money), the conversation also varies.
4. Depending on whether the parent looks at the child's diary or not, the conversation will also be different and may lead to different endings.

The different storylines are being summarized into 4 subsequent endings (2 bad endings, 1 happy ending, and 1 open ending, and because of the time constraint the open ending wasn't implemented)²³. Considering our game length is supposed to be within 30 minutes, it will take about 15-20 min for a player to experience a single storyline.

Programming

The programming part comes to a higher-level subtlety. The first challenge, also the major significant challenges we met, is how should we store the branching of the story.

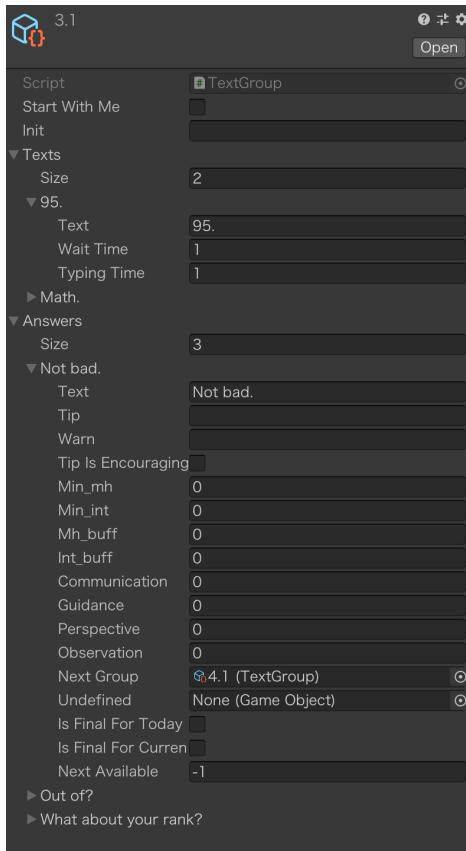
Initially we are thinking about using a tree structure as the data structure, for the sake of convenience, because we don't want to manually input the story line by line into Unity3D. At first we are thinking about writing in a `txt` file and writing a `parse()` function to automatically turn the `txt` file into tree nodes. It looks something like this:

²³ A summary of all the storylines is listed out in this document (in Chinese):

<https://docs.google.com/document/d/1EOFduby5Lm342hBhKINw7DmaB0lRAWxDkHFReo93v74/edit>

Using & as delimiter and each node stores message groups and response groups along with the children indices. However, this soon went to failure, because the story branching is actually not a tree! Many of the nodes converge, which means several parents could share the same child. Also, this simple parser makes incorporating game values extremely difficult: if we want to set up the threshold values for each selection, and the bonus we get from choosing the choices, the node could be very hard to read.

Finally we implemented the story nodes by constructing data structures that are specified as `TextGroups` in Unity. A `TextGroup` looks as follows:



```

1 0|
2 msg=#|
3 res=Hi, mom. Are you free now?|
4 cld=1,2&
5 1|
6 msg=Yes./Sure.| 
7 res=I have a question.| 
8 cld=#&
9 2|
10 msg=No.| 
11 res=What?| 
12 cld=#

```

Each `TextGroup` knows the incoming messages specified by the `IncomingMessages[]` `Texts`, and each `IncomingMessages` knows its `WaitTime` (the time lapse between receiving players' reply and starting to type) and `TypingTime` (the time spent on typing the incoming message). These variables allow a high-fidelity simulation of instant messaging.

Also, each `TextGroup` knows the player choices specified by the `Answer[]` `Answers`, and each `Answer` knows a bunch of information: its `min_mh`, `min_int` (the minimum mental health and intimacy) and `MH_buff`, `Int_buff` (the bonus received by making the choice). It also knows `tip` and `warn`, for giving the players hints and tips after making the choices. Most importantly, the `NextGroup` and `NextAvailable` allow the node recognizing its unique child. The linearity underlying is the basis for the tree story storage; these text groups work pretty robustly.

The second challenges appear to be similar, but also fundamentally different.

The face-to-face chat-simulator: the basic logic is similar, but this time a single dialog may involve more than 2 talkers. Therefore, we need to pay additional attention to how characters are switching.

Also, notice that characters will not be “typing”, neither “waiting”, therefore, the basic logic on instant message simulators is actually not applicable here. It seems that a completely different data structure will be more helpful. Due to time-limit, this part is not fully implemented on our

own -- we are building the face-to-face chat-simulator using the \$4.99 Unity Asset, DDSSystem²⁴. In particular, we made the adaption to automatically create and assign characters. For example, in the original asset, we must create the characters in the inspector, but this will create a problem, for example, if the player defined the kid to be a son, not a daughter, then we cannot use the daughter character showing up as the kids. Compared to other significant challenges, the challenges here are easier to solve.

Some other challenges appear at the scene management. We determined at the beginning of the project the game scene flow should be as following:

1. Monday to Thursday: Office -> Load (Office to Home) -> Bedroom -> Load(Sleep) -> Load(Home to Office) -> Office;
2. Friday: Office -> Load(Office to Home) -> Face Chat -> Bedroom -> Load(Sleep) -> Face Chat
3. Saturday: Face Chat -> Bedroom -> Load (Sleep) -> Face Chat
4. Sunday: Face Chat -> Bedroom -> Load (Sleep) -> Load (Home to Office) -> Office

So keeping track of the calendar could be important, and turning the date to a weekday will be required. However, by just making sure the mathematical relationship, this challenge is also solved quickly.

The remaining challenges are all subtle debugs and implementations, such as player customized variable substitution, render pipeline optimization, font shaders and button/toggle/InputField renderings. There are almost, certainly, surely, implicit bugs still remaining in this game, but considering the limited time, the challenges have already been handled smoothly, which meets our expectation.

Reflection

What worked?

Within this month, a significant amount of time and effort has been devoted to this project.

The following list describes what have been accomplished, meeting our expectation:

- The playtesting over iterations
- The writing of the story scripts, creation of endings and significant transitions
- The pre-game researches and surveys
- The chatting simulator functions well
- The shopping system and bill-payment system add some playability to the game
- The players indeed can reach to different endings upon the decisions they made during the play
- The final art render of the game looks good

²⁴ DDSSystem Github, <https://github.com/DoublSB/UnityDialogAsset>

- The robustness of game programming ensures there will not be explicit segmentation faults (null pointer references) or infinite loops.
- The players can self-define the sexual identities of themselves and their children.

The following list describes what we have discarded or have to give up, not meeting our expectation:

- More interaction with other game values, such as salary, mental health, and employer satisfaction
- Some other systems that were firstly proposed, such as TextMe(Mobile version), GGMail interface (the interface for chatting with the employer)
- Some existing game elements have not quite been used, such as the children's calendar or drawers.
- Saving progress is not implemented for the game.

What you might have done differently as a team?

First of all, we might have chosen a totally different game genre. Anyways, the effort that is required by a chat simulator may sound trivial, but actually it requires significant attention in the script writing and programming. Also, we deeply found the restrict of this genre -- the scalability of text adventure is very, very limited. The players will not like to play a story over and over again, which determines the lifespan of this game.

If we still decide to make such a chat-simulating game, we may have some disagreement in story components, and may develop into a brand new story, with brand new story background and branches. We may also need to find better ways to collaborate writing the stories, instead of dividing up the story and only taking care of the parts that are assigned to oneself.

Playtesting/Evaluation

Playtesting

To iterate this game and improve its design, we use a collection of player feedback from the narrative and game playtesting, and their evidence of learning from evaluation including anecdote and pre-/post-tests.

Narrative Playtesting

How did you approach the process?

When we write out the story, besides using a variety of ways to brainstorm and sketch out the story outline as mentioned above, we also use rounds of narrative playtesting to validate the logic, background, and character designs, modify the storylines, and polish the language in the story.

The general format of a narrative playtest is a remote phone interview with a narrative walkthrough, where the playtesters would play the character of the parent in the game, and the interviewer read the lines of different characters and interact with playtesters. The playtesters' knowledge is being elicited first: in all conversations, the interviewer didn't read the lines of the player and the playtesters need to respond with what they would say given the context to different characters. Then, the interviewer will read the player's character's originally written lines in conversations, and the playtesters are asked if it makes sense, or how could they better respond to different characters.

This is a very time-intensive process, as there are multiple characters and different lines of stories. It took more than 5 hours to just go through half of the story once, so we conducted 6 narratives playtest sessions of 1.5-2 hrs each, and we didn't have time to recruit more playtesters and run the narrative playtesting on our story and make more iterations, as incorporating stories and making changes into Unity is also a very laborious process.

Who did you playtest with?

Because of the complication of different possibilities in the storylines, the interviewer needs to be very familiar with the story, and because of the time limits, the only playtesters we recruited for the narrative playtesting are Christina's parents, who are 40- to 50-year-old working adults with an only daughter attending college (Christina).

What insights and changes did you arrive at?

In approximately a chronological order of how the story unfolds, here's an incomplete list of insights and changes we've made to the logic, background, character designs, and storylines of the narrative according to the feedback we've received from playtesting.

- **Story background:** Originally, we let the player transfer their child into a new school because of a chance that the player's colleague (Alex) introduced, but according to our

playtesters' feedback this is not feasible in the Chinese public high school system. So with their suggestions, we let the player and the partner be the introduced talents, and the company will offer accommodations like housing in the new city and transfer their child into a school in the city. The player and the partner made the decision of moving to a new city partly because of a better school that their child can be transferred into, but the child may not want to do that, which is the first conflict that could happen. The story setup is based on a unique cultural background, as this is a typical thing that Chinese families may do for the college entrance exam.

- **Character design:** Since the story background has changed, the character designs also changed according to playtesters' feedback.
 - Originally, Alex is designed to be the colleague that introduces a school transfer opportunity to the player, and Alex now becomes the HR manager at the new company who will be contacting the player about the procedural work, which is a way to introduce the story context directly using conversations.
 - Originally, Riley is designed to be the best friend of the player's child who attends the boarding school that the player's child will be transferred into, and Riley may provide additional information that the introverted child is unwilling to say. But now the new school is located in a new city, so Riley becomes a cousin of the player's child, and Riley's dad (Lim) is now the brother of the player who has a close and intimate family relationship.
- **Decision reason:** One of the very important decisions that will influence how the storyline unfolds in our narrative is whether to buy or not to buy the player's child a new phone, i.e. the player needs to decide whether to keep or break their promise. The original reason for it was that the player needs the money to buy something else, but again this isn't quite reasonable because:
 - If buying a new phone will be difficult for the family's income, they can't be the introduced talents who are at least middle income families.
 - If the context is a middle income family, then a new phone is not a significant family spending that needs the parent to weigh their decision and consider breaking their promise (if they have not forgotten that).
 - According to the playtesters' feedback, we now let the player's partner to be opposing this idea as the player's child had addicted to the phone, so now it's very reasonable that the player need to decide if they will neglect their promise, talk with their child to set phone use rules, or directly reject the partner to keep up with their promise.
- **Unnecessary conversations trimming:** One of the significant changes in the story is that after playtesting, the story is more concise, multiple unnecessary conversations merged into one or are deleted. Originally, I was trying to introduce clues and complete

the underlying logic of the story using daily conversations, but playtesting helped me to avoid getting lost in the sidetracks of the not educational part of the story.

- For example, I want the parents to add the new contact of the school's security guard, who will be telling the parent that their child asked to see the security footage of their classroom to find some lost items, which is a clue that the player may use to find out the underlying story.
- Initially, I wrote multiple conversations with the teacher over the weeks, when the parent asks (1) how they should pick up their child from the boarding school, (2) what should they do if they arrive late, and finally (3) getting the security guard's contact.
- But it's not necessary at all to split the conversations into separate days, and it's not relevant to the educational purpose of the game. Therefore, I merged the 3 pieces of conversations with the teacher into a few concise lines with Lim (since parents would prefer to ask the relatives rather than bothering the teacher for less important things).
- **Story component:** The playtesters suggested that there should be more conversations directly with the children at the early stage of the story, and the original design of the story has a three act structure where the "school transfer" part should have a lot of interaction with the children; however, given the difficulty in a collaborative story writing, the team member who should have written the transfer part of the story failed to write a consistent story, and the parent-child interaction style feels very segregated and forceful according to the playtesters, but unfortunately, we had no time to fix it.

There are many more nuanced changes to almost every line of the conversations. Take a very small example, I used to start the conversation between the player and the partner on April 16th night with the player saying "Are you still awake?" According to the playtesters feedback, it's very unnatural between a couple as they would directly bring up the issue instead of checking if the other is falling asleep, so I modified the start of the conversation to be directly a choice of options like "What do you think about what Ms. Wang said," etc.

The language of conversations such as tones and word use was changed to be more realistic and suitable according to the contexts and character designs. The lines that serve for educational purposes where both bad and good options and the tips feedback are presented were especially carefully considered and modified. There are too many modifications to the specific language in the story to be fully translated and incorporated in this final report, but they are all kept in the playtest note documents that are 20 pages each²⁵.

²⁵ [Note for narrative playtest \(1st half\)](#), [note for narrative playtest \(2nd half\)](#) in Chinese

Game Playtesting

How did you approach the process?

After we've implemented the game and incorporated the story, we conducted game playtest sessions in various formats depending on the amount of time that playtesters are available.

1. The playtesters may be interviewed using remote video chat during the gameplay and are instructed to think aloud throughout the process (the interviewer mostly watch the players play the game without providing guidance), or they may be handed over the game with no further instructions and they need to playthrough the game on their own, and there will be a follow-up phone or chat interview after they've finished the game.
2. The playtesters were asked to keep track of the change of intimacy scores on their own, by providing screenshots or photos, or the interviewer will keep track of it by asking the playtester to check on current status every day when the character enters the office.
3. Some playtesters have completed both the pre- and post-game survey, while one playtester only completed the post-game survey. Some playtesters have very little time, so instead of completing the surveys, they would directly talk about their experiences through text or voice messages.
4. Playtesters with extra time were asked to adopt different strategies during the gameplay; for example, following intuition when making the decisions in the first pass. In the next rounds, they could explore the game by doing random things to test out whether they can get to the different storylines, such as peeking at the child's diary, or by choosing the rationally best or worst sets of solutions to act as an ideal parent or a bad parent.

Who did you playtest with?

Christina conducted 5 game playtesting sessions that each took 30-60 minutes with her parents, aunt, and college-age cousin (4 playtesters, 2 of them have never heard of the game), where the whole game playtest notes were collected and written mostly in Chinese²⁶. Tony also conducted multiple game playtesting sessions with friends, who provided very high level feedback that are summarized below together with all playtesters' responses.

What insights and changes did you arrive at?

We fixed many minor bugs according to the playtest feedback, such as the reused conversation blocks are not linked correctly, the narrative appears inconsistent when the diary dialogue is inserted, the children didn't seem to agree to transfer but the next immediate conversation with Lim made that assumption, and etc.

The more significant changes we've made were about the *intimacy score*, *tip feedback*, *story option*, and *tutorial design*.

²⁶ Please refer to this document for the whole game playtest sessions notes (mostly in Chinese):
<https://docs.google.com/document/d/10L9LeUr-R1g7J7f-iVppFQ9Mq87jMwe3wQFeCyRs16w/edit#>

Intimacy Score

The *intimacy scores* were used as an important criteria to decide which storyline to go into. Originally, the initial intimacy score is 1234, purchasing a new phone (keeping up the promise) for the kid will add 500, peeking at the child's diary with a .95 probability of being discovered would have the intimacy score being zeroed out, and the criteria for a high intimacy level on April 16th for the "confession" storyline is 1600, i.e., if $\text{intimacy} \geq 1600$, the child will honestly confess all underlying stories, but if not, the child will lie to the player, which may result in a bad ending as the player neglected what truly happened with the child.

After playtesting, we decided that the initial intimacy score was too high and the purchase of a new phone had too much influence, which diluted away the changes of the intimacy caused by conversations, as each option only adds or subtracts 5~15 points. Additionally, the 1600 criteria is too high that virtually no one can get to the happy ending if they didn't purchase the new phone for the child. Therefore, we've changed the initial intimacy to 123 points, purchasing a new phone to 100 points, and the criteria on 4/16 is set to be 500, which made the changes of intimacy scores in a conversation and their educational consequences more significant.

Tip Feedback

It was also unanimous that the *tips feedback* wasn't very noticeable in the first game prototype, which is a big problem, as tips are the immediate feedback directly related to our learning objectives, without which this game will be much less educational.

We've done several things to direct the players' attention to the tip bar, such as integrating it into tutorial and highlighting it with a bright yellow color, moving the tips bar out of the mask in the design of home conversation, and changing the time that new tips appear from 5 seconds to always be there until the next tips pop up.

Story Option

Our playtesters were confused when some options are very similar or when the choices don't seem to have any educational implication, as they don't know what's the outcome of making such choices. Playtesters also don't like the dynamic that they need to make choices that they don't like, for example, when no options reflect their own thoughts or when there is only one option that they are forced to make. For example, the options that triggered the most complaints were exactly the "school transfer" part of the story written by another storywriter and wasn't thoroughly playtested by parents, so playtesters feel really uncomfortable when they have to talk in a forceful tone.

We didn't have time to fix all issues found with story options, but we can do more testing on our narrative in the future. Also, we can potentially make the story more concise or only let players choose when the options are related to educational objectives to address the confusion, so players won't be forced to make a choice that they don't want and they can just watch the automatic messages being sent without asking for their input.



Playtesters: "I won't speak to my child like this but I have to choose it or I can't proceed"

Playtesters: "Same here, none of the choice is what I want but I have to make one :/"

Tutorial Design

Originally we didn't have any tutorial because we conceive the mechanics of a chat game to be pretty intuitive; however, after playtesting, we've discovered that our target parent population who may play little digital games before have limited intuition for how to proceed in the game without explicit guidance. For example, they may fail to discover that they need to

1. click at the TextMe App icon to start,
2. click on Current Status and flip page to check their intimacy scores,
3. click at one of the different options to proceed the conversation,
4. click at the phone icon to purchase goods at Amazonia,
5. click on the phone's home button to go back from the App interface, and
6. click on the character of the child in the home interface in order to start a conversation.

Parents with very limited prior game experiences have little idea of exploring around or inferring what are the buttons that can trigger interactions. Therefore, we've created the first half of the tutorial for the TextMe interface according to the playtest feedback and added some reminder messages for buying the child phone on Mar. 25th (we didn't have time to implement the tutorial for the home and phone interface).



Playtesters: "what should I click?"

Playtesters: "how should I proceed?"



Playtesters: "I didn't realize that I can click on the phone in the first round of game play"

Playtesters: "I can't proceed from here, so I guess that's the end of the game?"

Evaluation

We mainly used the pre-/post-game surveys (pre-/post-tests), the playtesters' anecdotal, and an incorporation of learning science principles as the evidence that our game could be an effective educational game. If we have more playtesting sessions and time to fix the design issues, we will be able to provide a stronger argument to justify the educational value of our game.

Pre-/Post-Test Surveys

In our design, we have the pre-game and post-game survey²⁷ asking similar questions related to our learning objectives. We discover that in the 3 pre-game survey responses (one participant didn't fill it out)²⁸, playtesters' answers are more on the general level. In the 4 post-game survey²⁹, their responses included more details such as "respect child's privacy and don't look at their diary," "use less pre-existing assumptions and let the child speak to you," which are in alignment with the specific learning objectives we incorporated into the game.

However, because of the small and non-representative sample of our playtesting (only 4 participants, 3 of whom are experienced parents), we can't draw any conclusive statement about the actual gains of the educational values. Nonetheless, this pre- and post-test design should be a good way to evaluate players' learning if we have a larger, more representative

²⁷ English version of pre-game & post-game survey:

<https://docs.google.com/forms/d/14wM5CU2Plj5B8u2FiCYiNuYozsnT5a0-VVefPKQofw8/edit> (before)
<https://docs.google.com/forms/d/1Hi7q68U3asrhoFM2DXTyRO3H3K28fEC7bU7qM91uXd8/edit> (after)

²⁸ Chinese version of pre-game survey responses:

https://drive.google.com/file/d/1aRcC7YnUL7Wb1_No8SbNVkxVpUb6l6vo/view?usp=sharing

²⁹ Chinese version of post-game survey responses:

https://drive.google.com/file/d/1Y7c-btvqqVDlySz7J01s5xI5N_Dd0A3s/view?usp=sharing

population of playtesters, especially more new parents instead of experienced parents who already know a lot and may have smaller learning gains.

Additionally, we could use a grounded theory approach to analyze the survey responses, or we can perform CTA on novice parents before and after gameplay to compare against an expert model. We can also generate some quantitative scores by comparing our learning objectives against the pre- and post-game survey responses to label the number of specific learning objectives that are successfully generated by the participants.

Playtesters' Anecdota

In general, the playtesters said that the game is fun and educational, especially about the ways that they can communicate with kids. Even the experienced parent said that it offers a different lens that allows them to reflect on their own parenting practices and they can draw inspiration from the different options in the conversations. But some other experienced parents whose child had passed the high school phase said that the story doesn't feel relevant enough, as they know their kid won't act in the same way as the child character in the game.

Theoretical Justification

Plenty of learning opportunities were incorporated in the game in alignment with our listed objectives and the learning science principles³⁰. For example,

1. Anchored learning & activate preconceptions & application: familiar real-world setting and cultural background
2. Segmenting & scaffolding & interleaving: 4 different categories of learning objectives are interleaved, gradually scaffolded, and segmented into different days (if the save progress function is implemented)
3. Immediate feedback: intimacy scores and tips
4. Delayed feedback: summaries of intimacy score breakdown
5. Alternative & multiple presentations: good/bad chat options
6. Multiple examples, comparison, variability: the partner character's lines, good or bad chat options, all choices are worked examples
7. Metacognitive learning support: Self-explanation & reflection prompts in post-game survey, and the list of objectives as the metacognitive knowledge organization support

³⁰ The reorganization of learning science principles from multiple literature by design implication <https://docs.google.com/spreadsheets/d/1lbFHq1yrTNXHnJF8PMN3B3c8I67pNcZpLWyvihX-UkM/>, which are largely drawn from Kenneth R Koedinger, Julie L Booth, and David Klahr. 2013. Instructional Complexity and the Science to Constrain It. *Science* 342, 6161: 935–937.

Reflection

What worked?

- We separated the narrative playtest and game playtest, which give us more opportunities to fine-tune the story writing before integrating it into the game.
- The narrative playtest is also useful for the content creation process, as it really helps to make the story more logical and realistic.
- Playtest sessions give us valuable insights on the mechanics, dynamics, and story setting of the game
- The learning science principles are really helpful when we want to think about our design and also provide a theoretical justification of this work from the educational perspectives.

What you might have done differently as a team?

We might start playtesting earlier on the game system, dynamics and stories before the full game playtest to make the tutorial and interaction more intuitive for our parent population. Also, we might split the playtesting job to more team members in the future so that all storywriter can have enough time to fully understand the changes and playtest the narrative.

The story writers should also communicate more with the engineer in the earlier stage of the story writing process. Many restrictions discovered in the middle of the story-writing process added tremendous difficulties in story writing. Initially, we had 30 days of the story planned, but the finalized story is only 8 days and we've only implemented 7 days given a time limit.

For example, we discovered that for the game implementation and the text rendering's sake, we need to limit the number of words that each character can say to 30 Chinese characters (about 45 English characters), which is hard as it requires us to convey the same amount of information with fewer words.

Also, we figured that there needs to be frequent back-and-forth conversations between the players and the characters, and it'll be hard to let the player send out multiple messages again because of the implementation issues. Additionally, we need to limit the number of times when the player initiates a conversation, as it will be harder to implement.

There are also game dynamics like daily commute to work and going back home, and there are different functionalities that can only be achieved under specific context, which again limits the interaction that can happen in the story. For example, players can't use the TextMe app and thus can't check other social posts on Moment during weekends, and players can only use their phone to buy stuff on Amazonia when they return back home. Because of these dynamics, we need to adjust how our story unfolds accordingly. Many originally planned dynamics were also cut because the story part didn't use it (such as the employer's satisfaction & email system, but it's not quite related to our educational objectives anyway).

Final Game

Game background:

You are a Chinese parent with an only child, who is a junior at a public high school. You and your partner will move to another city because of work and the better school there, and you want your child to go with you. The story starts from here...

Game instructions & download:

Before the game start, we'd like you to answer the following questions with regards to your current beliefs in parenting practices: [pre-game survey](#)

After you've filled out the survey, you can download our chat game from [this folder](#). Since we make the game in Unity, the relatively robust build is for the Windows 64-bit system. If you have a 32-bit system or a Mac, the game can't properly run. A tutorial of game controls has been incorporated into the game.

In the summary part of the English version game, besides a [post-game survey](#) which asks you to reflect on your game experience, we've also listed out the parenting tips that we've incorporated into the game, so for your reference: [Parenting Dos and Don'ts](#).

Note:

We implemented the Chinese version first and then translated it into English, and because of the time limit we mostly use google translate, so the sentences may sound weird, and the story sometimes may not make sense to you if you don't have a Chinese cultural background. The text render may also be off as English sentences are generally longer than Chinese ones.