FULL GAME DESIGN DOCUMENT
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Learning Content

Summary Summarize your content area in 1-2 paragraphs.

We have designed a role-playing game with the goal of teaching personal finance to children who are just becoming old enough to legally work. Because these children are likely to have never had a source of income before, they are likely to be inexperienced with the concept of managing the money they make. Ultimately, we want to teach students to be financially responsible, and to be able to make calculated decisions when considering different ways of using the money they earn.

We aim to introduce the users to Financia. This is essentially a world where users can click on different cities in a sequence, with each city teaching one specific skill listed in the **Skills** section below. In each city, the user will be guided by a tour guide who introduces the user to various concepts in each topic (e.g. how to manage debt when in the *Borrowing Money* module), and gives the user a mini-game that utilizes using the concepts learned in the module. Once the users successfully complete a module, they'll be given missions and tasks in Finance World such as "save enough money to buy your friend a birthday present", or "you received an email that looks suspicious, how will you reply?" to encourage them to keep practicing the skills they've learned, and to move on to complete the next modules. We will design a rewards system that keeps the missions fun to complete and increase the complexity of the missions as the user completes more advanced modules.

Target User Attributes Describe the age of your user and the skills that you assume the user already has (that is relevant to your content). Your user must be in at least 3rd grade.

We aim to target children who are just beginning to be able to work (e.g. in America, around the age of 16). We assume that users will have zero experience with personal finance because the majority of our target users will not yet have ever had a job. We also assume that the user comes from low-income families who live paycheck to paycheck. This assumption implies that the user is unlikely to be aware of concepts like investing and money management, as their families most likely do not have any disposable income.

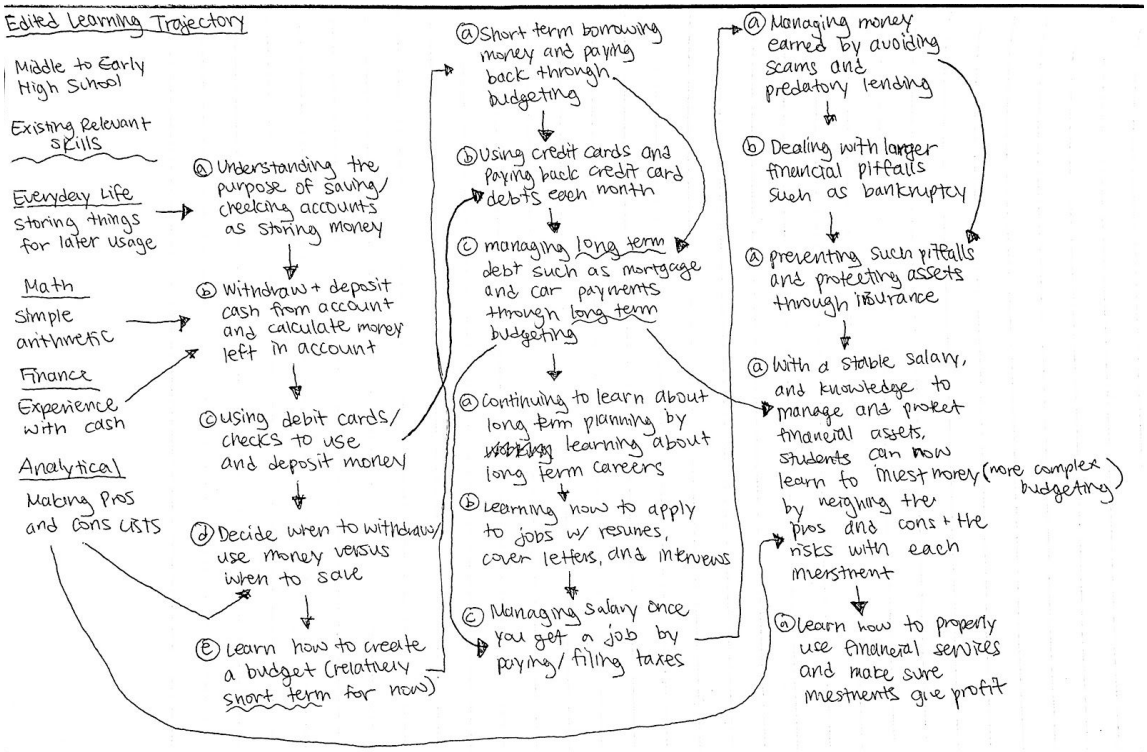
Skills Describe what skills you are going to teach your user.

We want to equip children with skills that allow them to be financially independent and to be able to make smart financial decisions with their future earnings. We have divided the skills into 7 categories:

1. *The basics of managing money*: this includes making/using checking and saving accounts, learning how to budget and save up for bigger goals, and weighing the costs and benefits of saving versus spending.

2. *Borrowing money*: we aim to teach students about credit, how to use credit cards, and how to manage debt. We want to teach students to be responsible about borrowing money and staying accountable.
3. *Learning how to earn money*: we will guide students through the process of finding a job to obtain a stable income. These skills will include resume/cover letter writing, and interview etiquette and practice. We will also teach students how to deal with taxes and paperwork that come with working.
4. *Avoiding and dealing with financial pitfalls*: we will teach students about scamming, identity theft, predatory lending, bankruptcy, and other financial pitfalls that can occur. Students will learn how to avoid these pitfalls and how to deal with them if they do occur.
5. *Insurance*: here, we will teach students how to protect their property and financial assets. This will include health, auto, and other types of insurance.
6. *Investing*: once the students have learned the basics of saving, spending, managing, and protecting their finances, we will teach them how to invest in stocks, bonds, retirement accounts, and more, and identify the different types of risks that come with such investments.
7. *Using financial services*: finally, we will teach students how to utilize services such as investment managers by understanding the risks and benefits that come with diverse services.

REVISED Learning Trajectory Diagram a learning trajectory for this subject that starts with existing relevant skills on the left-most side and progresses through knowledge they would learn in a game like yours (your game won't need to cover all of this).



Describe your sources and methodology for creating your learning trajectory. It cannot be just made up out of thin air - you need to draw upon existing examples or justify the reasons why you have created it in that way. For in-class content, you can use national standards for that content area. For out-of-class content, you could draw upon existing materials and extract the learning goals and orderings that those use.

We drew our learning trajectory mainly from these two personal finance curriculums we found online: the *High School Financial Planning Program(HSFPP)* and *NextGen Personal Finance(NGPF)*. The main backbone of our trajectory builds upon the existing curriculum of HSFPP, which had six modules ordered in the following trajectory: 1. Managing money, 2. Borrowing, 3. Earning Power, 4. Investing, 5. Financial Services, 6. Insurance. We both agreed with this curriculum that learning how to manage existing finances should be the first step in personal finance - followed by borrowing money which builds upon the skills learned in the previous module and learning how to best present oneself to increase earning power. However, we discussed the next trajectory and thought that investing is not necessarily the best next step.

We wanted to structure our game to follow a natural order so that scaffolding could be utilized - by providing a framework for novices and slowly remove the scaffolds as skills are learned. During the first part of the game, the students can focus on learning how to manage the basics without worrying about real-life financial problems of actually earning money. Once they learn how to earn money, they now incorporate managing that into the game, and we can now remove another scaffold. Teaching investing at this point does not do this - we thought of investing as a more advanced topic that can be learned after the student learns to be financially responsible and independent, and free to explore other ways of earning money.

We looked at the NGPF curriculum, which was divided into units, and saw that financial pitfalls was taught after the basics of budgeting. We agreed that this was another scaffold we could remove at this next level of our learning trajectory, and added it in. Then, we moved onto the next trajectory of protecting the assets earned through insurance, a natural extension after learning how to protect finances from pitfalls, and finally followed through with investing and financial services. This way, our learning trajectory naturally progresses as follows: spending, managing, borrowing, earning, protecting, and investing finances.

We used constructionism in building the learning trajectory as well. For example, students learn the basics of investing first, and are then equipped to move onto the next step in the trajectory, which is utilizing this knowledge to use financial services carefully. Because they know the risks and benefits of investing, the can use these skills into deciding which financial services are best for them.

Basic Game Design

Summary First summarize the game type, placing it into a genre. What is a well-known game that most closely resembles your game? And what are the major differences between yours and that game?

Our game can be classified as a role-playing game, one that closely resembles any role-playing game with a linear story progression (e.g. Assassin's Creed). Our game is similar to Assassin's Creed in that both games follow a linear storyline, with different levels (in our case, cities) becoming unlocked as the player progresses through storyline quests. Both games also allow players to revisit unlocked cities as often as they'd like. Some major differences between our game and Assassin's Creed are that Assassin's Creed offers an open world (where players can interact with anything and everything outside the main storyline), whereas our game restricts the player to a linear world (where players are restricted to certain areas within the game).

Description Describe your game. Take care to describe the different elements such as premise, rules, etc.

The premise of the game revolves around the exploration of a fictional country, Financia, with individual cities that start off locked, and become unlocked as the player progresses through the game. The story begins with the player taking on the role of a fictional character, who is a personal finance coach backpacking through Financia, with an initial bank account value of $500. The goal of the game is to see every city in Financia without running out of money.

As the player goes through different cities, they are greeted by the city mayor, who gives the player a quick learning module on a specific area in personal finance (e.g. saving money, investing money, or insuring personal property). After completing the initial learning module with the mayor, the players are free to explore the city by interacting with different NPCs. Players can also receive different "quests" from NPCs that involve taking from or putting money into their bank account (e.g. the player needs to save up money for a birthday gift, decide what to do with their paycheck, or budget money to pay bills).

In order to earn more money, the player can take on additional quests in which the player "tutors" NPCs in personal finance. Upon accepting the quest, the player will be given a financial scenario that the NPC is in, and the player must analyze the situation using previously learned skills and give a recommendation to the NPC. Depending on difficulty, the NPCs may always reward the player with money, or only when the player makes the correct recommendation. We hope this will be an effective mechanism to engage the player in spiral learning, all the while contributing to the player's progression through the storyline.

If the player ends up with no money in their bank account, and all of their available quests require taking money out of their bank account, they can either receive some "gift" money or lose the game and start over (depending on the difficulty level). There are no rules regarding

where a player spends their money, as long as they have a balance in their bank account (just like in the real world).

Players will be able to gauge their performance in various ways. Each task completed will give a badge, such as a “bank account created” badge that they can collect. Furthermore, users in-game levels will rise with each task completed. The levels increase with experience (higher levels of expertise reached) and play (number of tasks completed, even if it’s repetitive). There will be a live leaderboard where the levels of all the players in the game and the number of badges they have will be displayed. This will allow players to see where they are in respect to the rest of the players, and add a competitive element for those who wish to compete against other players.

REVISED Successful Game Design Describe how your choices of elements will result in the keys to successful game design. This includes increasing difficulty, engaging players' attention, as well as resulting in learning.

Our game keep players consistently engaged in a constant state of flow through: i) keeping the player challenged, ii) providing clear goals & feedback, iii) promoting a loss of self consciousness, and iv) prioritizing the journey (rather than the destination).

We aim to keep the player constantly challenged by making quest completion the main mechanism of game progression. The player cannot move on to the next city in Financia without completing all of the quests in the current city. We can also change the difficulty level according to how long it takes players to complete quests. For example, if we anticipate a certain quest to take an average of ten minutes to complete, and a player has already spent twenty minutes on the quest, we may display some in-game hints to nudge the player in the right direction. Similarly, if a player is completing quests at a much faster rate than we anticipate, we can create more of a challenge for them by increasing quest difficulty (e.g. giving larger numbers or introducing more complexity into the financial scenario). This way, we have a basic mechanism to ensure the player is making good progress through the game, while not having too easy of a time as well.

By making sure that the player is progressing through the game, we are also ensuring that gameplay results in learning. This is because each of the tasks in the game, even free-play where the user can decide to buy or save certain items, involve using personal finance skills they learn in the city. The free-play and interaction with each NPC increases in complexity as the user’s level rises to take into account the new material learned. This ensures constant learning and reinforcement of the material learned previously.

We also aim to provide a clear goal for each quest. Each quest will have very specific requirements (e.g. given X amount of money, how would you budget bills, expenses, savings, and investments?) The purpose of having clear goals is to give players a very clear path from the problem to the solution. This way, we can keep players engaged on a straight path to

progress through the game, and prevent players from getting lost and losing interest at the same time.

Finally, we aim to promote the loss of self consciousness by attempting to drag the player into the world of Financia. The purpose of role-playing is to give the players an outlet from reality (which is a very common motivation for playing video games). Through this outlet, players can get lost in a fictional world, while time flies in the real world. Prioritizing the journey (i.e. progressing and exploring different cities) takes precedence over the destination (i.e. completing the game) because this pushes players to stay engaged for the sake of enjoyment of the game, rather than for the sake of achieving the end goal of completing the game.

We also added elements to our game to engage with our specific target user. As mentioned in our Learning Content document, our target users are children who may be approaching the age to work or have more financial responsibility, specifically early high school and late middle school children. We also narrowed down our target user during class exercises to be an immigrant to the country with less proficiency in the English language, no prior experience with money management, and a student with a creative mindset.

In order to engage such students with limited fluency, we designed our game to present less text and more content through images and demonstrations. Our presentations of material will be through animations that actively show the different tasks one can complete with money management, rather than dialogue listed by text. We also provide multiple ways to understand the language, by playing audio when encountering an NPC as well as showing text on the screen. With these methods we aim to keep the user engaged with the learning content, and experience less frustration with the challenges provided by the game.

We noted that our game design may provide less outlet for creativity because of its set storyline with limited options for customizing tasks. We decided to add elements of avatar customization to provide more creative exercises for our target user. Items such as hairstyles, clothing, and accessories can be bought with game currency by the user, and the look of the avatar can constantly be updated. We will also continue adding different such items to the store as players levels increase. In this way, our target user will be motivated to continue earning money through missions to gain different items, and find an outlet for creativity.

REVISED **Player Types** Describe how different "player types" will find something that engages them.

We will list the main “player types” described in the Game Design Workshop book below and discuss how each will find the game engaging in a different way.

The Competitor - This type of player wants to best the other players, regardless of the game. This player can be engaged by looking at the live leaderboard in the game, and try to have the highest level in comparison to everyone else playing the game.

The Explorer - Our game is very well tailored to this type of player. Because our game revolves around the exploration of a fictional country, and each city presents a different arena that can be explored, and the player will be able to continuously explore. Each of our cities will have slightly different aesthetics and new components, and since each city represents a different area of content, the exploration pushes physical and mental boundaries constantly.

The Collector - This player will be able to “collect” different sets of knowledge as they continue to explore the cities. As the realm of exploration increases, the player can collect badges of achievement as well.

The Achiever - This player will be engaged by the rising level system as more quests and tasks are completed.

The Joker - This player can be engaged by the free-play aspects of our world. They can make their character buy random things that don’t take the game seriously (such as buying a toothpick for a birthday present), or go through bankruptcy multiple times just to play around.

The Artist/ The Craftsman - These types of players are engaged by creating, building, and designing. This player will be engaged because tasks will involve solving problems by constructing a plan, and designing little aspects of the game - for example, to save up for a present, what things will the player have to give up? What will the present be and how much will it be worth? Will it be okay to go without another need such as new clothing? The craftsman and artist will be able to engage in creatively constructing plans and designing how their character will act in the fantasy world.
We also will have avatar customization tools available which can be bought with Financia’s currency. For the more creative players who want to customize their looks and buy various hairstyles or clothing, this would motivate them to continue earning money through the missions in the game.

The Director - The director will be engaged because they will be able to direct and take control of the choices of the character they are role-playing.

The Storyteller - This player will be engaged because our world is one of fantasy and imagination. While the financial aspects of the game are definitely based around the real world so the skills translate directly, the graphics and storyline of different cities will be imaginative and different from everyday life.

The Performer - This type of player will be engaged because our game essentially allows the player to take the role of another character and put on a show to develop their new character

through different actions. Their performance is also shared with other players through live time updates and leaderboards, putting on a show.

Progression Describe how your game makes the user progress through the different elements in the learning trajectory you produced. How do you teach different elements and how do you gradually increase the difficulty and/or complexity as users progress through the levels?

Our revised learning trajectory is attached to the end of this document below. Our game makes the user progress through the different elements in the trajectory by locking the more advanced topic “cities” until certain tasks are completed that demonstrate the mastery of skills needed to continue. We teach the different elements in a story-like manner since our game is a role-playing game. When each city is entered (in the learning trajectory, the beginning of each city is marked by the bullet point starting off at “a” again), the mayor will teach the basics of the topic such as withdrawing or depositing money. This is intended to be a brief, tutorial-like experience.

More intensive learning takes place when the player continues to explore the city, and meets various characters who require tasks from the player in order of the learning trajectory. For example, in the first city, the player will encounter an NPC who asks the player to set up a checking/savings account to be able to use money within the Financia world. Once the player successfully completes this task, they will be able to meet another NPC who teaches the next task in the learning trajectory, which is to withdraw and deposit cash. For example, the player could travel through a shopping plaza where they can choose to buy different items, and in order to do so they need to withdraw cash. With each successful completion of the learning trajectory items, players are now able to tutor in this topic, which allows for spiral learning.

We will increase the difficulty and complexity of the game as users progress by making the encounter with each NPC more complex. For example, once the user has learned to budget and save, they could come across the same shopping plaza mentioned before. At a lower level, the items in the shopping plaza would all have been sold at low prices so that the user didn’t have to worry about saving versus using most of their money. However, at higher levels the items can have high prices, even ones that exceed the amount in the user’s bank account. Now, the user not only has to withdraw money to purchase items, they have to continue weighing the pros and cons of buying an expensive item, and even budget to save up and buy an item that they cannot right now. The users will be able to come back to cities they explored before. In this case, the difficulty in encounters with different NPCs will still increase with the player’s expertise level. For example, if the player has completed exploration of the city that taught about borrowing money and credit cards, they will have the option to use a credit card at the same shopping plaza and deal with instances when they go over their credit limit and so on.

Full Game Design

Limitations in Skills Explain how you took into account the limitations in skills of the user to influence your game design.

Our target player when designing the game was a student from a low socioeconomic background. We assumed no prior experience with saving and money management in this environment, and decided to start off everything with the usage of cash since many of these students might not have dealt with cards.

Our target player is also an immigrant (who is possibly less proficient in English), which made us think about not using as much text in our game, but rather relying on images to convey information. For example, for our tutorial of learning concepts by the mayor, we decided to use an animation that would present content with images and movement (mayor physically showing which buttons to press at an ATM, how to use a card, and so on). In addition, any dialogue with an NPC would use lower grade-level vocabulary (late elementary), and we would print the words on the screen as well as have an audio so there are multiple ways to understand the content given. We also wanted to make sure students who have a hard time focusing (cognitive limitations) could come back to learning content and dialogue. Our game takes this into account by allowing players to replay all material presented by the mayor and the interactions with the NPCs.

We also took into account common disabilities such as visual limitations (color-blindness or lower eyesight). While our game focuses a lot on making each city of the world creative and unique design-wise, we will also make sure that the aesthetic elements are not only dynamic colorwise, but use contrasts to emphasize images for these players.

Finally, we noted that the topic of personal finance on its own may be dry and challenging to students of young ages from 13-16. Because of this, we wanted to tie in as much of our learning lessons as possible into real life scenarios that they could experience. Our design of interaction with NPC's and the missions and tasks they are given revolves around this idea. For example, when we begin the introductory levels of money management, we will engage the player by asking them to do things they may encounter in real life: for example, one task would be to buy a birthday present for someone (as opposed to grocery shopping, which is a good example of money management but may fail to connect with teenagers who don't necessarily spend time cooking). By starting off with these easy connections to everyday life, we wanted to build confidence in personal finance before approaching concepts that are not encountered very easily at these ages, such as investing and insurance which are among the very last levels of our game.

Various Backgrounds What cultural elements did you remove because they are "mainstream" culture that may alienate some students? What elements did you add to make students of different backgrounds relate to the game more? (Note: I will not accept the argument that your

game is culturally agnostic. We all live in a culture, and you need to put in the work to identify what cultural elements you have included)

We wanted our missions in the game to have personal connections with the players. For example, instead of just buying an object for no reason, the player could have their parent's birthday coming up and have to buy a present for them. However, we noted that it is often assumed that students have a traditional family structure and those that do not might find these additions to be alienating. Because of this,we decided to remove these types of wordings, and instead allow the connections to be customizable. For example, we mentioned in our design document how players will be able to choose and enter who they are buying a present for, as well as the present itself.

An element we decided to add recently was the ability to customize the player's avatars. Not only would the players be able to customize skin and hair colors of their avatar, we will also add different types of clothing and accessories that can be bought with the world's currency. We aim to make these accessories culturally diverse - for example, different items can be added on different cultural holidays (i.e. during Holi season, multicolor powder can be bought to be "sprayed" on the avatar). We will have to make sure to be inclusive in adding these elements and also have descriptions of their significance so that cultural elements can be shared and appreciated rather than blindly used. These elements will also be constantly updated to reflect students' backgrounds and feedback.We aim for this to add another aspect of personalization to the game and allow students with different backgrounds to connect with their character. The NPC's in our game will also represent different cultural backgrounds and ethnicities. Because our game revolves around meeting different mayors and characters who give out missions, having a diverse pool of characters allows for diverse representations.

Implementation This must include at least three "levels" of your game. One needs to be an introductory level. Two others need to be fairly consecutive more advanced levels that show the progression of difficulty between two adjacent levels.

We will implement our game using the Java game engine.

The first "level" we plan to implement is the most basic step in our learning trajectory, managing money through savings and bank accounts. At this level students will learn how saving money works at a high level, and the basics of depositing and withdrawing cash and checking bank account balance. The next level we want to implement comes right afterwards in our learning trajectory, using money with different modes than cash, such as debit cards. At this level the difficulty of the game rises, as students learn to make decisions about when to use certain modes. Finally, the third level we want to implement is the usage of credit cards. This naturally progresses from the previous level of learning about different ways to spend money, but adds on the concept of borrowing.

We believe that these three levels in an MVP will be able to show the natural progression of the learning trajectory we developed content-wise. In addition, the different “tasks” a student can be given will also increase in difficulty as they progress through levels.

Because each “level” in our full game involves a lot of components (a mayor giving an animated tutorial, many cities with different alleys for exploration, many NPC’s to interact with, side quests and main missions…), we will be simplifying a lot of the game.

For example, we will only have two cities, and the cities will have the same design. Our vision for the fully implemented game engine would be multiple cities, each with very different layouts for more fun in exploration, but in our MVP we will be restricted to smaller cities with similar designs. We will also use text instead of an animation to present the learning content. There will be one NPC sprite per level to give missions, and we will not include optional side tasks that would give the player more freedom to horse around in the game.

MVP Propose what you will implement by the end of the quarter. What levels will you implement? (describe the three levels and where they fall on your learning trajectory) What will the interface be? Make sure your description is detailed enough so that I can evaluate the challenge for this class. This is our "contract" that, if you implement it in a high-quality way, means you have completed a project sufficient for this course.

<u>Short Game Description</u>
“Financia” is a role-playing game where you will become a personal finance coach who is traveling through the fantasy world *Financia.* As you complete various missions and help the citizens of the world with their financial problems, you will unlock diverse cities for exploration, earn money to buy items, and compete with other coaches to build a solid bank account and financial portfolio.

<u>MVP Specs</u>

- Game screen starts off with a map with two cities (one for basic money management, one for borrowing money). Second city is locked.
    - The top of the game screen will always have a current bank account balance, position on the leaderboard, and level status
    - Player can move their sprite to “collide” with a city and enter it.
- Sprite enters a city - game screen is a “street view” with other sprites and buildings you can enter:
    - The buildings are as follows:
        - Mayor’s office
            - Upon entering, learning content for that city is presented.
            - For MVP, we will use text instead of animation.
        - Bank

                - Screen will show a simplified ATM machine. Player is able to withdraw, deposit, and check the status of their bank account.
            - Store
                - Will have objects for purchase.
                - Player will press a key while colliding with an item to buy it (purchase modes increase as player's experience increases).
            - Tutoring Center
                - Player can "tutor" a citizen on personal finance by answering questions (these will be in multiple choice format).
                - Players will earn money for correct answers, in different formats depending on level.
                - For the MVP, limited number of questions will be presented
        - Each level will have a different NPC sprite. Player will "collide" with NPC sprite to gain the mission for their current level.
            - Once mission is complete, player levels up
            - Level up screen is presented, and then player finds themselves back in the mayor's office.
            - If the player levels up to a new city, the world map is presented.
- Level 1: Managing money with cash
    - Mission: buy ice cream for the NPC sprite with cash.
    - Since it's the first introductory level, the child sprite will essentially guide the player through the different buildings to complete the mission.
        - Enter mayor's office to learn how to use cash.
        - Go to tutoring center to earn money (money is put into bank account)
        - Go to the bank to withdraw cash.
        - Go to the store to buy ice cream and give to the NPC child sprite by colliding.
- Level 2: Using debit cards
    - After leveling up, the player receives a debit card from the mayor and another learning content presentation.
    - Mission: buy an item for another NPC using a debit card
    - No guidance from sprite anymore → player has to explore the buildings on their own if they forget how to earn money and so on
        - Tutoring center to earn more money. They will receive it in cash so they have to deposit it before using their debit card.
- Level 3: Using credit cards
    - After leveling up, the player is back on the world map. Player can enter the second city. Mayor once again gives learning content and a credit card.
    - Mission: Tutoring center is closed. Buy an item for the NPC using a credit card, then earn money to pay back to the bank.