Personal Devlog

Introduction

The Wilminktheater project aimed to transform traditional teaching materials into an engaging and interactive 2D Point & Click game designed to educate school children about theatre rules and etiquette. Current methods, such as verbal explanations by teachers and staff, often fail to captivate children's attention, resulting in poor information retention and disorder during theatre visits. This game seeks to address these issues by providing a fun, flexible, and educational tool that immerses children in theatre etiquette in an entertaining way, with or without teacher supervision.

The project builds on a prototype developed by Bo Hamer during her graduation internship at the Wilminktheater, which showed encouraging results in early user tests. Now, a team of six 4th-year Creative Media & Game Technologies students from Saxion University is refining and expanding the concept, with the goal of creating a playful experience that fosters engagement, improves learning, and ensures smoother school performances.

The team that worked on this project:

- Alexis de Cazenove: Designer, Team Leader
    - Portfolio Link: https://alexisdecazenove.online/
- Jose Peiro: Designer
    - Portfolio Link: https://joseapeiro.github.io/JosePeiro.github.io/
- Amber Kortier: Engineer
    - https://jarikortier.wixsite.com/portfolio
- Artiom Vostrenkov: Engineer
    - Portfolio Link: https://www.vostrenkov.nl/
- Thomas Reijmerink: Artist
    - Portfolio Link: https://www.artstation.com/thomas_reijmerink
- Jekaterina Markova: Artist
    - Portfolio Link: http://jekmark.artstation.com

Responsibilities

As an Artist, my primary role was to bring the game's world and characters to life through detailed illustrations, character art, and environment designs that enhance the player experience. In the ultimate final product, children aged 5-10 would be able to get familiar with Wilminktheatre's main event location and behaviours expected of them through environment exploration. As the designated artist for this project, my responsibilities included:

- **Character Design & Customization**: Crafting unique and engaging character concepts that align with the game's story, world, and style. The game from a third-person perspective will include a main character that will have customization options.
- **Character Animation**: Creating character 2D rig and animations using Spine 2D for the main character. The customizability of the main character also needed to be implemented to the rig through Spine 2D.
- **Environment and Background Art**: Designing visually compelling environments that not only immerse the player but also provide visual cues for interaction.

- **Maintaining Visual Consistency**: Ensuring a consistent art style across all characters, environments, and assets not only among my own work but also with Thomas, the 2nd artist in the team, so we can create a unified and coherent game world that enhances the player's experience.

Learning Goals

Learning Outcome 1: Rendered Illustrations

- By the end of IMT&S, I will create 8 to 15 fully rendered environmental illustrations, focusing on urban settings and internal structures of the key buildings. I will improve my skills in lighting, texture, rendering and shape language, tracking progress through peer feedback and client reviews. This will create a very valuable portfolio item that will show my capability in creating background art.

Learning Outcome 2: Spine 2D Rigging & Animation

- During the project I want to learn 2D skeletal animation tool called Spine 2D. I want to learn to create the art in the correct form and layering so it could be used for animation in it. I want to learn to rig and create the character animations. I also wanted to learn to attach different skins over the same skeleton for character customization possibility. I will complete this goal with the help of tutorials and exercises, I will also reach out to peers who are familiar with the tool to deepen my understanding. I will seek feedback from peers and teachers to track my improvement. This learning opportunity opens a new possible job position for me in the future.

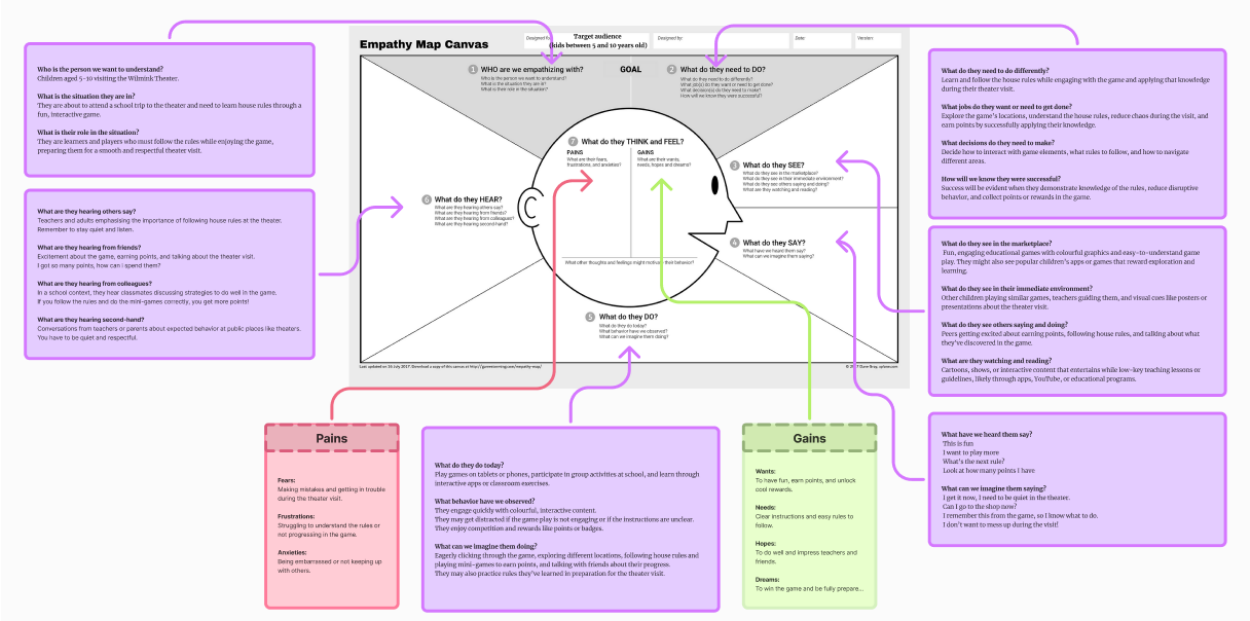
Learning Outcome 3: Character Art & Concept Art

- Within the completion of the project, I will design at least 2 individual characters and a 3rd character which will have customization options. All of the characters will have final rendered versions and concept art with variations of their appearances. The customization options for the 3rd character will at minimum include skin colour, hair styles and hair colour variations. Fully rendered character art for them will need to match the background style, and their design will need to complement the environment where they are placed. I will ensure consistency in design by studying various art styles and applying feedback from mentors or peers.

Concept Phase (Sprint 1-2)

In this phase, the goal was to build a strong starting point for the project by determining the core of the problem and creating a foundation that matches the client's vision and provides a solution. For artists this also included research, deciding on the right approach, and setting a clear artistic direction to guide the work moving forward. Our team used the **Double Diamond Design Model** to consider key points to the success of the project through all of its stages.

Empathizing and Defining



Games designed for kids can be an effective educational tool, combining entertainment with learning. Integrating educational elements can enhance their problem-solving skills, creativity, and logical thinking. *(MoldStud, 2024)* However, to guarantee a secure and educational experience, our team needed to take various factors into account while concepting the game for our target audience.

Diving into the **Diverging Phase**, first thing we did was to define the problems and wants of our clients and the children. We used **Empathy Map** and the **Problem Statement Canvas** to gain insights. As an artist, I made my own conclusions from the filled templates of these approaches. I focused more on the visual feedback elements of the concept, using the insight of the filled templates. This guided the visual design choices to ensure the game is engaging, functional, and tailored to the target audience's needs.

Clients' Needs

The Wilminktheater aimed to create an engaging and interactive solution to address the challenges of introducing school children to theatre rules and etiquette. The current teaching materials lack effectiveness, resulting in low engagement and poor retention of information. This often leads to chaotic behaviour during school visits, affecting the overall experience for both the children and the

staff. The client needs a playful and educational tool that can overcome these limitations by capturing the children's attention and making the learning process enjoyable. The game should be adaptable for use with or without teacher supervision, ensuring flexibility and accessibility across different classroom settings. Additionally, the tool must address the stimulation of the theatre environment, which often distracts children and prevents them from internalizing the rules. The client seeks a solution that not only introduces children to the physical locations of the theatre but also reinforces the code of conduct in a manner that sticks with them during their visit.

Product Requirements

To meet the clients' needs, the product should be a fun and engaging educational game designed for children aged 5-10. The game must function as a 2D point-and-click adventure, where children can explore the various locations within the Wilminktheater, interact with objects and characters, and learn about the theatre's rules in an engaging and interactive way. It should feature playful, accessible visuals that appeal to young children.

The product should be designed to work both as a standalone experience and in conjunction with a teacher's guidance, allowing teachers to easily incorporate it into their lessons. The game's mechanics should be intuitive and simple enough for children to navigate on their own, while still being engaging enough to keep their attention. The final product should also be tested with children to ensure that it is not only fun but also effective in conveying the necessary information about the theatre and its code of conduct.

In summary, the product must be an interactive, engaging, and educational tool that aids children in learning the rules of the theatre in a memorable and enjoyable way, making it an essential tool for enhancing the theatre experience.

Target Audience's Needs, Pains & Gains

To address the audience's pains, children's fears in the theatre is usually being afraid of making mistakes and getting into trouble in an unfamiliar location. Based on this, the game environment and characters must feel inviting and non-judgmental**.** This can be achieved through research of inviting and playful art styles that would lower the anxiety level of the children. Other pains could be disorientation and becoming overwhelmed in a new environment, recreation of the environment will familiarize kids with the navigation. Children also are not familiar with the rules, game needs to ease their decision-making with visual cues to address it.

Clear, animated highlights or glowing objects could indicate interactable elements. Playful details could be added to make the world more approachable. To Create an engaging and friendly world I thought to integrate a navigation system so the children can orient in the building easier. The art also should depict recognizable theatre-related elements (e.g., stages, seats, tickets) to teach the kinds about the layout.

To reinforce gains, the game should provide a sense of accomplishment and learning. The art can support this by showcasing vivid, rewarding feedback animations.

Conclusion & Ideas

By understanding the target audience's motivations and challenges through the empathy map, the artists could focus on creating **engaging, educating, and comforting** illustrations and characters for **young players**. This ensured the game is not only visually appealing but also effective in preparing children for their theatre visit.

Next to that, based on my personal analysis of the empathy map, environmental elements, like signs or posters with clear symbols, can visually reinforce the rules. These cues would ensure that both the children and the theatre benefit from the experience. The added features should not only match the children's age group but also reduce anxiety and encourage exploration. Given children's need for simple instructions, **visual clarity** is crucial. Objects and environments must have a simplified design with clear visual hierarchies. Important interactive items should stand out.

Problem Definition

At this point the **Defined** problem is:

Children aged 5–10 often struggle with understanding rules and expectations in unfamiliar environments during school trips at locations in Wilminktheater leading to anxiety, mistakes, and poor behaviour that can negatively impact their experience and that of others. For organizations like Wilmink Theatre, existing methods of teaching rules and proper behaviour are often ineffective, resulting in frustration for staff and missed opportunities to create positive experiences for the children. The game has to create an inviting experience that meets the needs of both children and the theatre.

Solution

A point-and-click game designed for children offers an interactive solution to this problem. However, for the game to be effective, the visual design must address these challenges by being intuitive, engaging, and age appropriate. The game needs to provide a clear, friendly, and visually appealing environment that encourages children to explore, learn, and model proper behaviour while aligning with the goals of the theatre.

The challenge lies in balancing visual clarity and simplicity with the need for recognizability, warmth, and fun. But by incorporating the insights into the game's visual design, the art will support both fun and educational goals. The 2D artwork will create an inviting, engaging experience that teaches proper behaviour while keeping children entertained, ensuring the game aligns with the needs of both the theatre and its young audience.

Art Research & Development

Desired Art Style

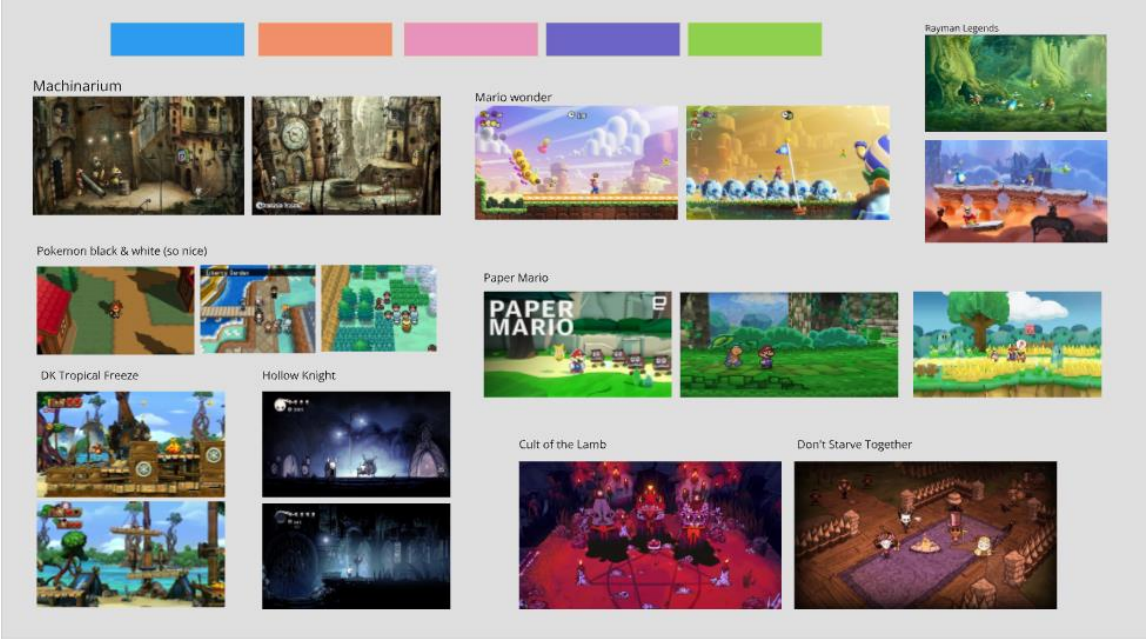
The visual elements play a crucial role in shaping the game's storytelling, mood, and atmosphere, making it essential to create cohesive, stylized artwork that supports the gameplay mechanics and narrative arc. As artists our first goal was establishing the mood and the style of the artwork we would be creating. We began the art-style desk research and created a Miro board. There I would organize all the collected materials that included games and illustrations by various artists.

We began our research by analysing other Point and click game examples. Games that I looked into included Cult of The Lamb, Paper Mario, Rayman Legends and many more. What we searched for in

these examples was the layout of scene, interactions, layering of the backgrounds and the art style. Machinarium gave us great reference of the environment layout and the character-scene interactions, but unlike the original idea of a first-person point and-click game it utilized a visible main character and a vastly different environment layout. Linking this game, we pitched the idea of evolving the game from a 1-st person perspective to 3-rd person perspective game with a walkable character to our client. She was on board with this suggestion, and we adjusted our research based on this update.

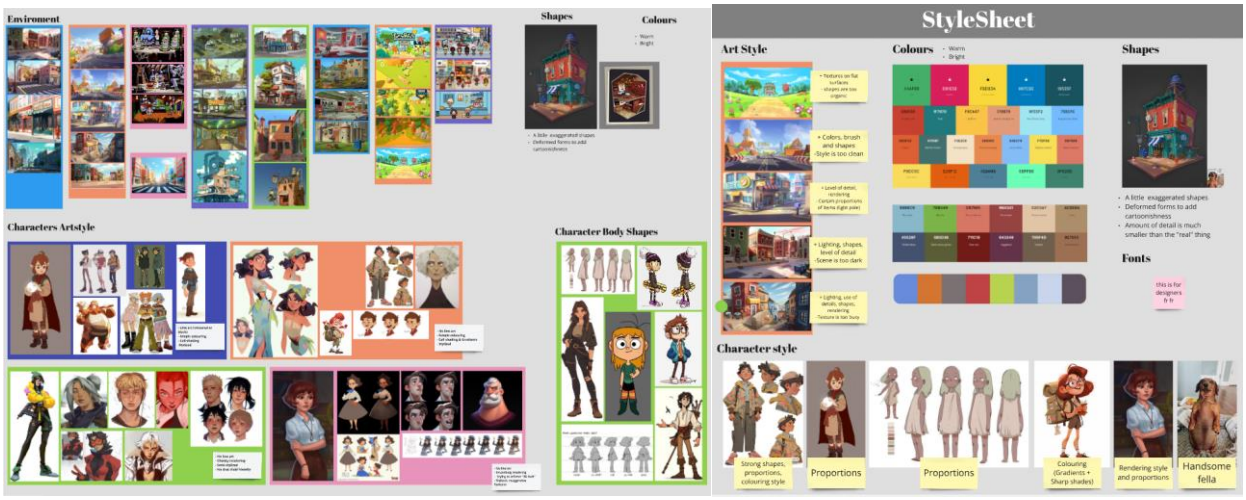
Reasons for us to pivot from the original prototype, was that among the games that we researched, ones with a main character that represented the player were more immersive. They engaged the player to discover and interact with the world more. We decided that this type of game suited our client's needs more and therefore successfully presented our client this idea.

With a different game style, the games that I would reference the most through the project were Machinarium and Monkey Island. Monkey Island 2 was mainly used as inspiration for composition and style of the visuals. Primarily we tried to apply its colour pallet, lighting, and shading techniques that it uses in city environments.



As game research did not provide enough visual guides for me to create a final style sheet, I collected various examples of environmental, character and prop art that had the possibility of fitting our narrative. The examples I have collected varied in art styles; each had a different presentation of shapes, line art and rendering types. I have sorted them based on these observations and similarities in art style. Through discussion with the team, we came to identify the desired looks of the game, also referencing other games suitable for our target group such as Toca Boca and Tamagotchi Adventure Kingdom. We verbally collected peer and client feedback. One of the most impactful art styles for us became a work by Nadiia Kanishcheva's wine shop concept art[1].

[1] https://www.behance.net/gallery/53460117/Wine-shop-concept



In children's media, visuals often feature soft and round shapes due to their psychological impact on young audiences. Circles and rounded forms are universally associated with gentleness, warmth, and approachability, this can be seen in the study in education resources by The Walt Disney Family Museum (n/d).

Based on our research and conclusions the desired art style of the game should have:

- Rounder and inflated shapes, no sharp angles (bevelling), slight deformation of forms
- Minimized original details, exaggeration of proportions
- Bright colours with mild saturation, usage of many warm colours
- Gouache brush texture on flat surfaces
- Emphasis on soft lighting and shading, no usage of blacks/grey in the shadows

Implementation of Real-life Environments

An important consideration for artists was the fact that all of the locations were real-life locations and one of the goals of the game is to get the children familiar with the surroundings. Ideally, children would be able to orient in all of the 4 initial locations. As a team, we went to all of the locations with a tour guide provided by our client. Not only were we able to take many reference photos of the rooms and structures, but we also deep-dived into the functionality of the Wilmikthreater in both professional and technical ways. This was a valuable exploration as some of the technical aspects such as the lighting work for the main stage later impacted creation of one of the mini games.

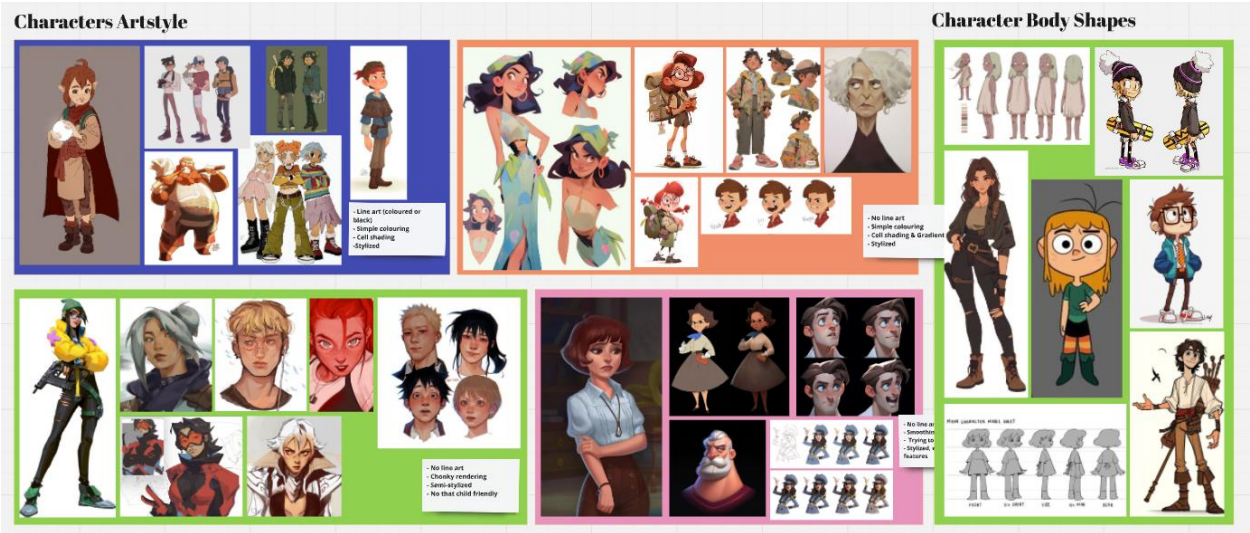
For art, we were analysing structures and trying to imagine how we would adjust the locations to fit in the style and how we would approach and achieve that. Based on the principles of simplification outlined in an article by Mary (2023), the process involves breaking complex subjects into their most essential and recognizable shapes while retaining the core characteristics that make them identifiable, focusing on the defining elements of a subject and removing unnecessary details. The colour and lighting should be used effectively to highlight key areas without overloading with detail. Overall, our art should ensure that the final form remains true to its identity, even with reduced complexity. (e.g., a clock tower with an oversized clock face for recognition).

Art Style Development

To develop a cohesive art style that can mimic the real locations in the defined style, my fellow artist Thomas and I started a calibration process. We both referenced real-life houses and applied the guides from the created stylesheet I've organized. I would simplify real-life buildings by reducing their structures into basic, rounded shapes. Sharp angles would be softened or completely removed, and forms slightly deformed to appear friendlier, aligning with the game's rounded, inflated style. Original details, like intricate carvings or small decorations, would be minimized or exaggerated in size to highlight important features. I adjusted the scale of details, like windows or chimneys, making them slightly oversized or undersized to fit the playful look.

Throughout the process, we regularly reviewed each other's work, giving and receiving feedback to maintain a unified style. This helped us to make quick adjustments and reinforce the style's key elements in every piece. We repeated this process a few times with different references until we settled on an image that would be used as our guide in style. These initial sketches helped us establish structural consistency across our designs.

Researching Character Art Style



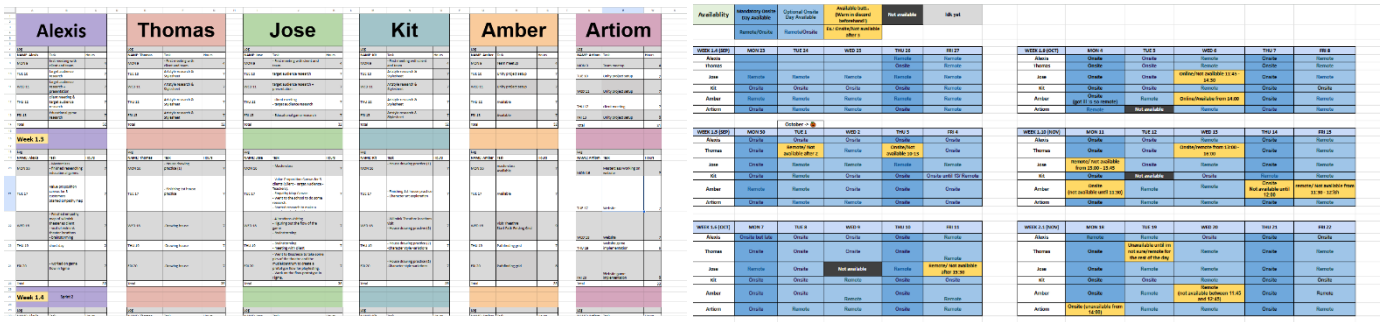
There were many options that could fit our background art among all the various character examples that I've gathered. I have grouped the collected references in two categories: Character Art Style and Character Body Proportions.

- **Purple Rectangle** features characters with line art, simple colouring, and cell shading. The style emphasizes exaggerated proportions and stylized designs. The usage of line art gives structure to the characters and enhances their clarity while **simple colouring** avoids overly complex textures, maintaining readability. The overall style is **playful and dynamic** which fits the narrative and requirements for our game.
- **Orange Rectangle** emphasizes no line art**,** simple gradient colouring. The characters appear lively and expressive, and a lot of features seem exaggerated. Absence of line art creates a **soft and approachable aesthetic**, ideal for children's media. G**radients** add enough depth and a polished finish while keeping the look simple. The designs feel **stylized and animated**, enhancing the game's visual storytelling potential.
- **Green Rectangle** features a **semi-stylized approach**, **chunky rendering**, and realistic proportions. The characters feel more grounded and detailed, with an emphasis on mood and texture. **Chunky rendering** adds a tactile, painterly feel to the characters and captures more nuance in character expressions and anatomy. While it is less child-friendly, this style's richness could inspire a polished look for specific environments or secondary characters.
- **Pink rectangle's style** utilizes **no line art**, with an emphasis on **stylized rendering** and **chunky, painterly shading**. The characters are expressive and dynamic, with well-thought-out proportions. The **rendering** provides a strong sense of depth and texture. Dynamic and exaggerated expressions make the characters highly emotive, perfect for interactive storytelling. **Soft shading techniques** align with a polished look that complements warm, approachable atmospheres.

To research character style body proportions, I analysed reference materials with diverse art styles, focusing on exaggerated and semi-realistic proportions. This included comparing head-to-body ratios, limb lengths, and overall shapes of the characters

Workspace Organization and Management

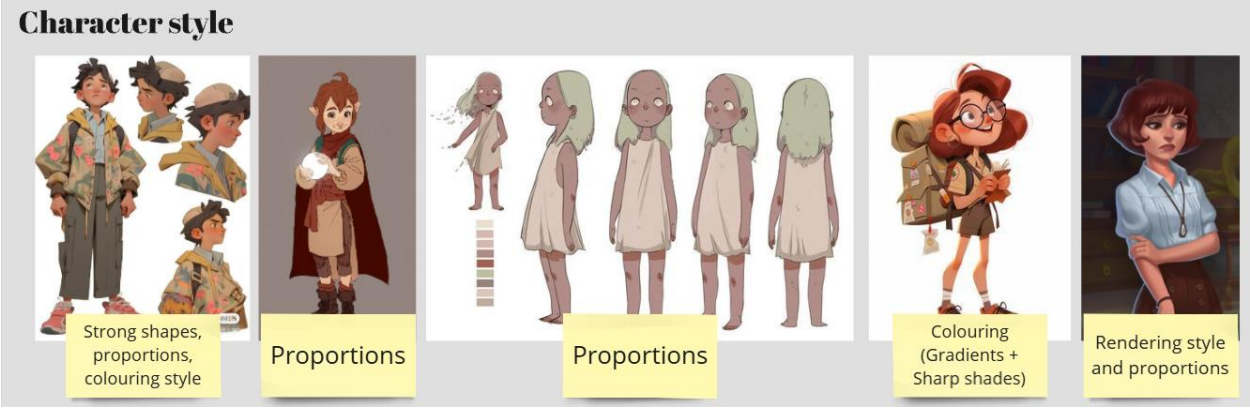
While as a team we used Jira and Discord for sprint management and communication we needed a little more coordination-oriented tool. Therefore, I focused on creating multiple Excel sheet slides in a single file (for easy access) that could deepen our organization. The slides included an **hour & task tracking**, where each member can put in which tasks they did during the day and how many hours they have worked. This will be useful for the value proposition of our project and works as an overview of people's tasks during the project so their contribution can be seen. Another slide is an availability sheet that allows one to see members' work location (remote/onsite) and the days/hours that they are not able to participate in work hours for certain reasons. In my opinion these types of information are very important to be able to keep people motivated and on the same page.



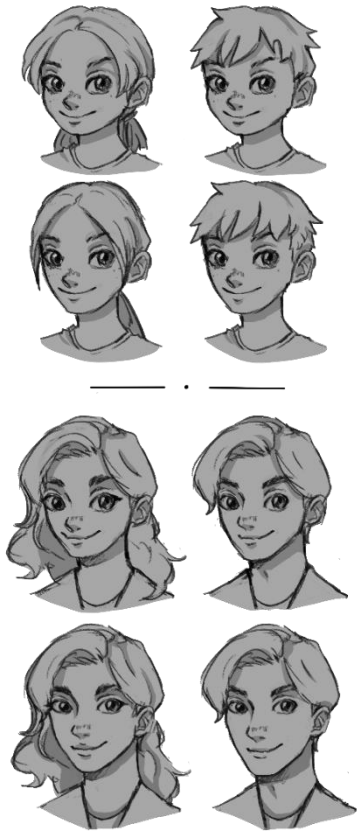
Design Phase (Sprint 3-4)

In the design phase, now that we established a unified and appealing style for environments, the goal was to develop how we approach asset creation and develop placeholders and sketches to ensure consistency within the project. Another important aspect in this phase was developing a character art style that would fit within the environmental art.

Developing Character Art Style



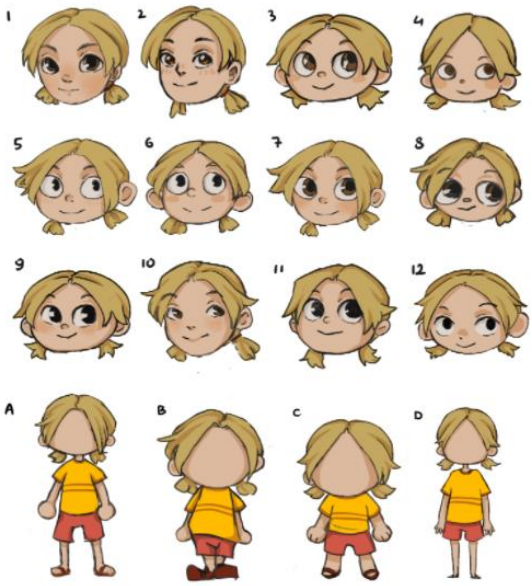
After discussing and combining our preferences into one reference sheet, we landed on **softer, more approachable aesthetics.** A balance of simplicity and visual appeal, avoiding overly realistic textures and adding warmth and depth without over-complicating designs.



At first being inspired more by the detailed and realistically proportioned art, I created variation of 2 characters: one male and one female, across different age groups: child, tween, teenager, and adult. For each age group, Rounded and softer features were emphasized in the child and tween designs, gradually introducing sharper and more defined characteristics for the teenager and adult variants.

This process allowed me to test how well the semi-realistic style would adapt to diverse characters and age-related changes, maintaining consistency in design and realism while staying approachable.

The designs were shared with peers and the client for feedback. While the sketch quality and character progression were praised, the art style was deemed too realistic for the game's intended audience and tone. The client highlighted that the semi-realistic art style, while visually striking, leaned too heavily into realism. It lacked the playful, exaggerated charm.



Based on the feedback, I pivoted to explore art styles that were more stylized, vibrant, and approachable. I shifted my focus toward designs with more **simplified forms** and exaggerated proportions referencing more cartoony examples from my research.

This time, to determine the best style for the children's main character, I created 12 iterations of the same character face and 4 body types in a variety of art styles. While I mostly combined different references together some of the examples are inspired by more popular styles like Ghibli and Animal Crossing. I focused on experimenting with **shape language and proportions and** to see what would resonate most with the project's goals. I played with the shapes of facial features, using circular eyes, soft cheeks, and exaggerated, rounded expressions to amplify warmth and friendliness.

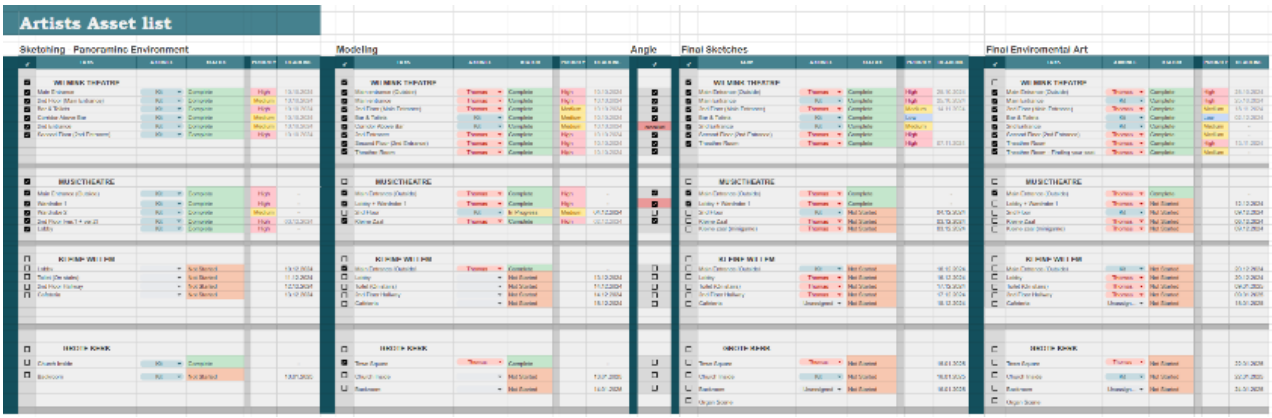
Originally these were supposed to be tested with children but due to difficulties and rejection from schools it was not possible to arrange, so instead I conducted peer reviews to gather constructive feedback on the designs. The results of this review were highly varied, as preferences differed significantly across the group, with several options (e.g., 3, 5, 6, 7, 8, 9, 11) being equally well-received. However, certain iterations, such as 1, 2, 4, and 10, were notably less popular. Upon reflection, it became evident that these less-favoured designs included semi-realistic or overly detailed elements that clashed with the intended aesthetic of the game.

Given the lack of consensus among the more popular options, I decided to synthesize elements I personally found compelling from each of the preferred designs. Additionally, I drew inspiration from a ticket holder provided by the client, ending up with cute and expressive character designs. Based on the sketches I ended up with for the main character, I also developed adult proportion examples. Upon another review with client, she really like both adult and the kid versions.

Development of the Environment Art Pipeline

While we did have our tasks on Jira, it was important that we have an overview of the entire pipeline of our art creation system for environmental art, so I prepared an excel slide for artists. There we had a more detailed task list, that depicts the overview of the entire pipeline of environment art creation, with deadlines, priorities, and assignees. The pipeline that we would follow would look like:

Panoramic Sketch (if needed) →3D Modelling → Angle Selection → Final Sketches → Final Environment Art



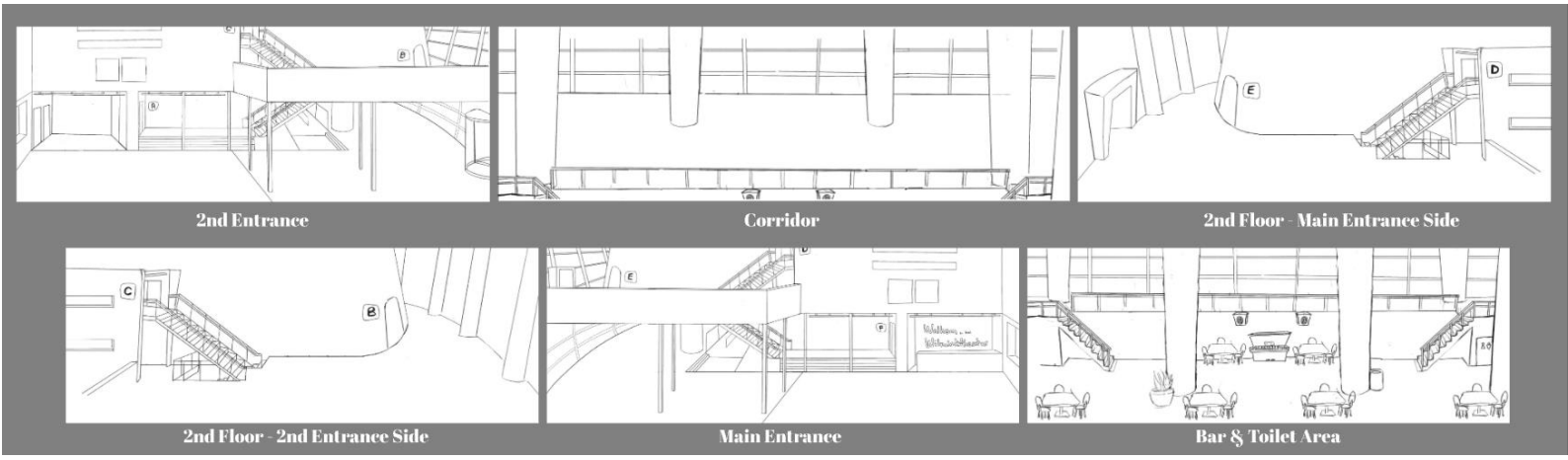
The environment art pipeline was created to streamline the production of high-quality background illustrations. My key considerations while organizing it included its adaptability and efficiency. The pipeline had to accommodate feedback loops and iterative development. A structured approach was necessary to manage time and resources effectively.

The pipeline was structured into five stages, with each stage building on the last to ensure the final art was polished and functional.

1. **Panoramic Sketches:** To flatten out and simplify complex environments into a cohesive layout that children could easily comprehend.
2. **3D Modelling:** To ensure correct perspective and spatial consistency across the environments.
3. **Angle Selection**: To determine the most engaging and functional camera angles for each environment.
4. **Final Sketches:** To transform selected angles into detailed 2D sketches with addition of details and colour match it.
5. **Final Environment Art:** To refine sketches into fully rendered backgrounds.

This pipeline ensured a structured and repeatable approach to creating environments, facilitated collaboration through clearly defined stages and allowing for feedback at each step.

Panoramic Environment Sketches



The panoramic sketch phase was an essential first step in the environment art creation pipeline. This phase involved creating a wide-angle, flattened representation of more complex environments. The purpose is to simplify the layout in a way that is both visually engaging and easy for children to understand. After the visit to the locations and taking a handful of reference pictures, looking at the pictures was still making it hard to navigate even for us as adults. By using panoramic sketches, I would be able it captures as much of the environment as possible in a single frame, allowing children to comprehend the relationships between key locations and objects within the space.

Firstly, I focused on creating mapping of Main Wilminktheater location, which included 6 sketches. All of them covered all of the reachable rooms for the clients. There rooms will be referred as; Main Entrance, 2nd Floor (Main Entrance Side), Corridor, Boar & Toilets, 2nd Entrance, and 2nd Floor (2nd Entrance Side). These areas would be our main priorities throughout the project. I also created 6 sketches for the Muziekcentrum, covering the entire 1st floor and a sketch for the Groete Kerk.

This approach is particularly useful for a point-and-click game, where a clear understanding of the environment is critical for navigation and interaction. Some other games like Monkey Island 2 and Sally Face also use this type of environmental art. By presenting the environment in a panoramic view, children can more easily orient themselves and plan their actions, reducing confusion and making the game experience more enjoyable.

3D Modelling

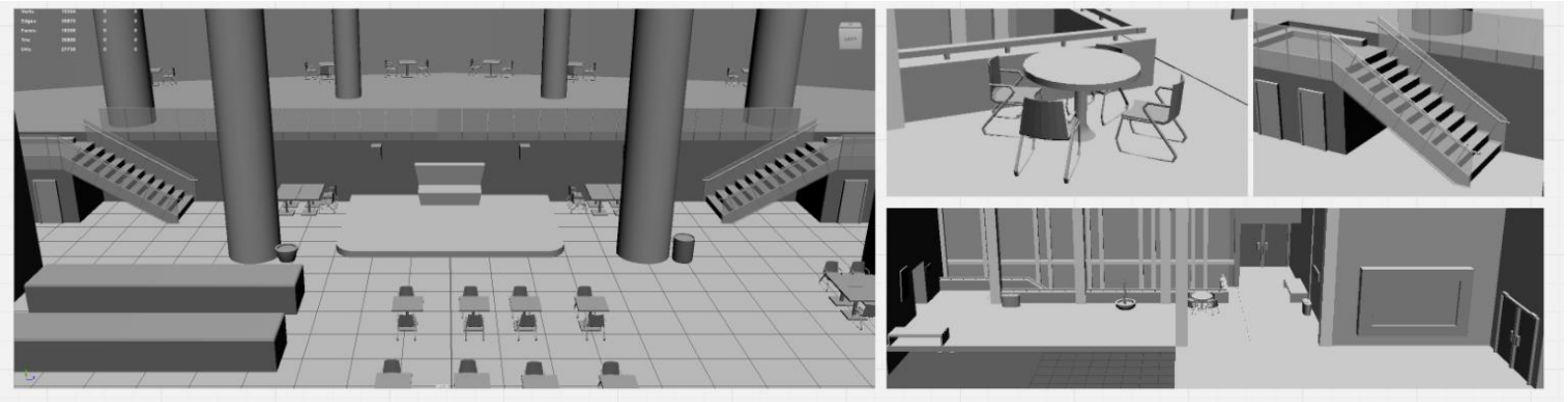
In the environment art pipeline, the creation of 3D models in Maya played a crucial role, especially when transitioning from the panoramic sketches to fully realized environments. These models served as the backbone for determining angles, composition, and spatial relationships, ensuring consistency and accuracy in the final illustrations.

When I decided to base the final environmental artwork on 3D models, I originally drew inspiration from **Niko Gesell's environmental artwork**[2]. Gesell's approach demonstrated how 3D models can be effectively used to establish accurate perspectives, lighting, and composition for detailed 2D art. This technique not only streamlines the process but also ensures consistency and realism in complex environments.

I focused on creating a singular, comprehensive 3D environment that combined two sketches of key areas within the Wilminktheater, “The Corridor”, and “Bar & Toilets”. For Muziekcentrum I made one model for the Second floor. The models emphasized the rooms’ defining shapes, such as unique architectural features and layout elements, while maintaining a level of detail sufficient for artistic interpretation.

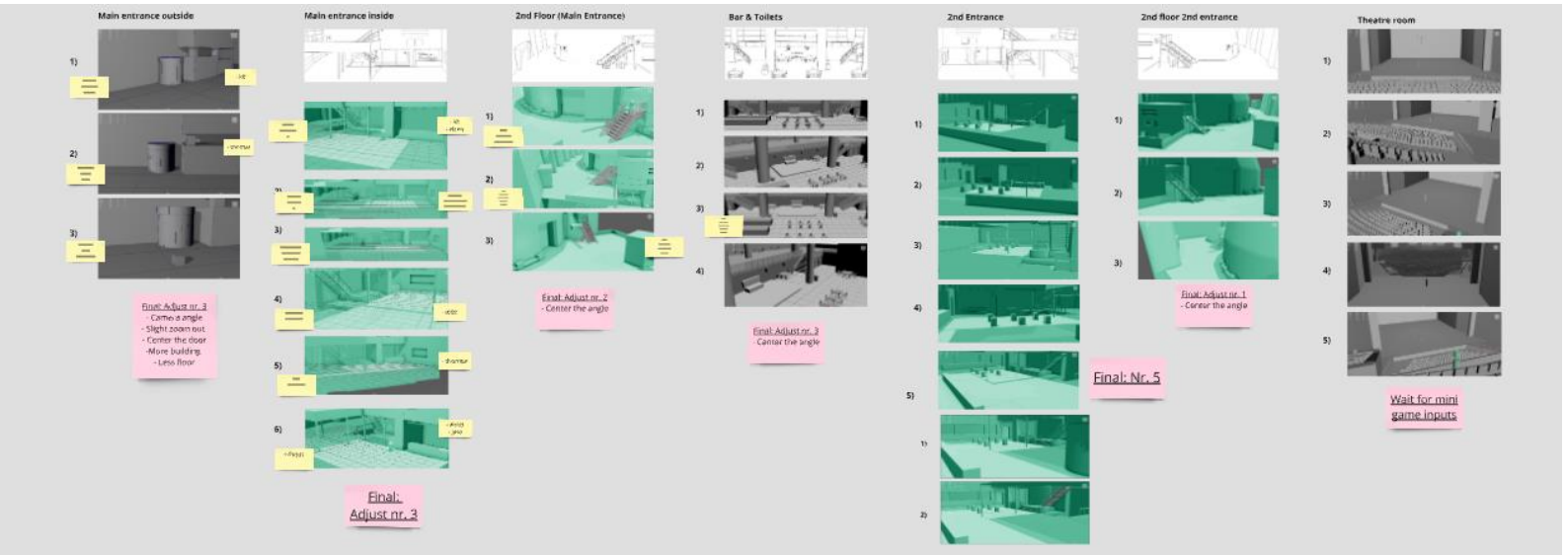
For instance, prominent seating arrangements, decorative panelling, and lighting fixtures were outlined to ensure clarity when refining into final art. Additionally, I incorporated more complex furniture elements, such as intricate props and seating and decorative elements, to better capture the immersive atmosphere of the spaces. While creating these models, I balanced between including sufficient detail for the final sketch and simplifying fewer essential elements to avoid overcomplicating the modelling process.

To understand how this approach is commonly used, I researched the workflows of other artists and industry practices. I analysed how 3D models serve as a base for 2D paintings (Using 3D in Concept Art | Evenant, n.d.), particularly in game development and animation. The technique is often used for its ability to simplify complex scenes, test various angles, and ensure precise proportions and perspective, while still leaving room for creative stylization.



[2] https://www.artstation.com/nikogesell

Angle Selection



After completing a set of 3D models with the other Artist, we took multiple screenshots from various angles, to present them. Team meetings were held to review these iterations, selecting the most suitable options based on functionality, aesthetic appeal, and alignment with the game's narrative. Consensus-driven selections ensured that chosen angles supported gameplay and storytelling.

At this point in the project, we created a more detailed planning timeline, and have made a decision to focus on the vertical slice of the project rather than trying to create all 4 locations without proper completion. We consulted with our client, and we shifted our goal from completing all of the 4 locations to creating a vertical slice of at least 1 location (Wilminkthether), which was satisfactory to our client.

Considering this change, some of our sketches and 3D models would be irrelevant for the completion of the project for the time being.

Character Customization

Analysis of Common Appearance Traits in Kids

To immerse the player even more, other than just having a visible main character I suggested to implement a character customization in the beginning of the project. To create inclusive and engaging character customization options, I conducted research into the most common appearance traits among children. This included studying demographic data and observing physical characteristics like hair types, skin tones, and eye colours that are prevalent globally. I referenced articles on inclusive character design and diversity representation in media (Ma et al., 2022) to ensure that the options covered a wide enough range of appearances. This research aimed to allow as many children as possible to see themselves reflected in the game, which would increase engagement and personalization.

It was important to keep the base gender neutral, and uniform. So unfortunately, our customization would not be able to support different body types, and gender could be determined by the perceiver.

I took into account statistics of hair, eye and skin colours preeminent in the Netherlands when deciding on the options. According to CBS (2023), 15% of children aged 4-11 wear glasses, which makes

more than 2 million children who need visual aid. Based on this I also decided to include glasses into the customization.

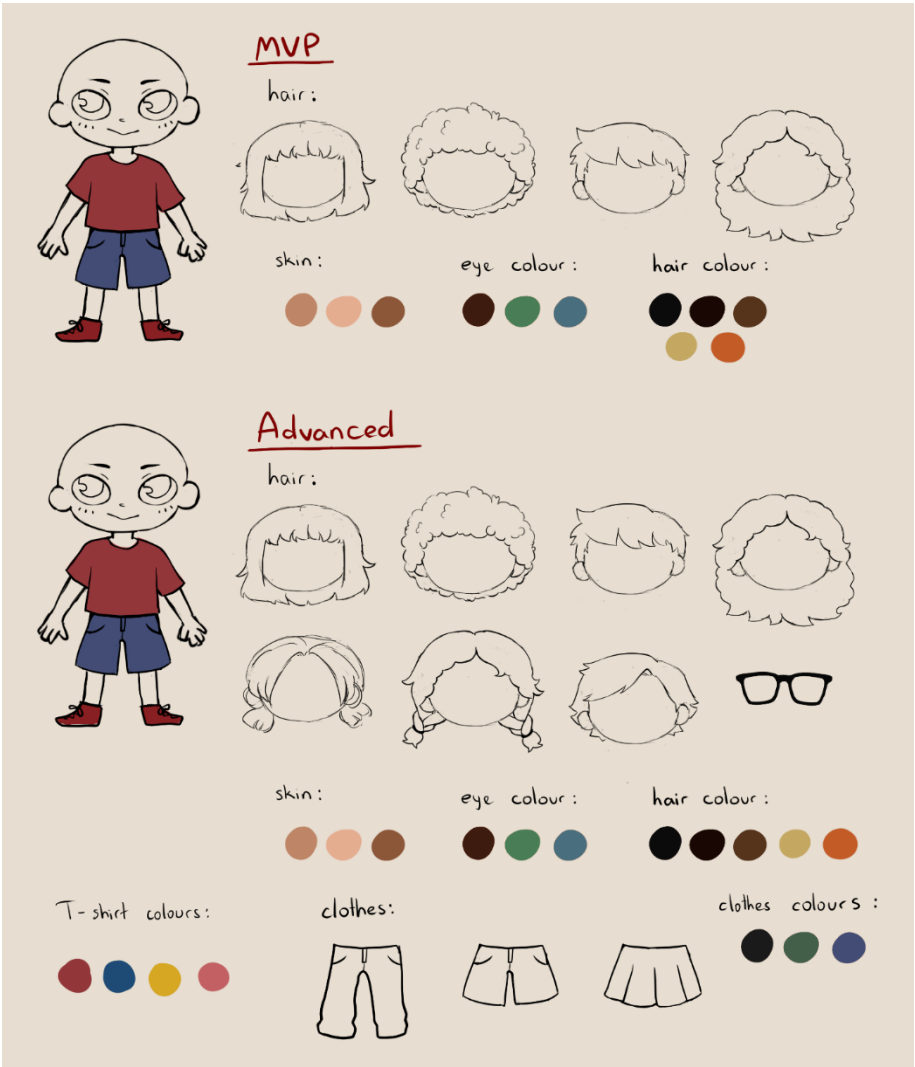
We also conducted a playtest with children.

MVP (Minimum Viable Product) Customization Options

Given the project's pacing and resource limitations, I developed a set of MVP customization features that ensured a diverse yet manageable range of choices. These included:

- **4 Hair Types**: Straight Long, Straight Short, Curly, and Coily, chosen to reflect the most common global hair textures and lengths.
- **3 Skin Colours**: Light, medium, and dark, covering a broad spectrum of skin tones.
- **3 Eye Colours**: Brown, blue, and green, as these are the most prevalent natural eye colours worldwide.
- **5 Hair Colours**: Black, dark brown, light brown, blonde, and ginger.

These options were carefully curated to strike a balance between simplicity and inclusivity, ensuring the customization system was easy to implement and intuitive for players.



Advanced Customization Options

If the project allowed for additional development time, I proposed advanced customization options to further enhance player engagement:

- **Additional Hairstyles**: 3 more styles would be added to increase variation, catering to different personal preferences (e.g., braids, buns, or shorter haircuts cuts).
- **Accessories**: The inclusion of glasses provided a way for children who wear glasses to connect with their avatar.
- **Clothing Customization**: This feature allowed players to choose:
    - **T-Shirt Colours**: Customizable from a palette of 4 vibrant shades.
    - **Bottoms**: Options included pants, skirt, and shorts, each with colour customization to align with personal preferences (3 colours).

This tiered approach to customization not only aligned with the project's goal of inclusivity but also provided a scalable system. MVP features guaranteed functional diversity, while advanced options added depth and personalization, allowing children to feel a deeper connection to the game and its educational mission. These efforts also demonstrated to the client the game's potential for future updates and enhancements, adding long-term value to the project.

Spine 2D

Spine 2D is a powerful software for 2D skeletal animation widely used in game development. It allows for creating animations using bones, meshes, and attachments rather than frame-by-frame animations. This approach not only saves time but also optimizes the performance in games since it uses fewer assets and is more flexible when it comes to customization.

Skeleton Creation and Testing

My initial exploration of Spine 2D began with creating placeholder art sketches for all the character's limbs and other movable parts. For spine, all the movable items need to be prepared on separate layers and be implemented one by one. I focused on the most general chunks of the body first.

These placeholders were simple and functional, designed to help me focus on understanding how the software's rigging and animation processes worked.

I used them to build a basic skeleton within Spine, assigning bones and hierarchies to ensure proper movement. By experimenting with different setups, I could understand how each part of the character interacted within the skeleton structure. Once the skeleton was in place, I created a very simple animation with chaotic movements to test the limits of the placeholders and identify areas needing adjustment, such as proportions or pivot points.

Adjusting Character Art

After testing the placeholders, I created a more refined version of the character art that incorporated adjustments informed by the animation tests. I adjusted some limb shapes, and separated character parts into smaller elements. Based on the animation test I noticed that the way the hands are turned is unnatural for the movements that we will be using so I turned the palms around.

This step focused on improving the aesthetics of the character while ensuring that all parts worked seamlessly with the existing skeleton. Using this refined art, I re-implemented it and improved the skeleton, adding more bones to support the new elements. I developed a test animation to confirm that everything moved naturally and cohesively.

By the end of this draft phase, I had gained a solid understanding of Spine's workflow and tools, including how to design art assets for optimal compatibility with animation.

Production & Testing Phase (Sprint 5-8)

NPC Character Art

For the NPC designs in Wilminktheater, I collaborated with the designers to identify the roles needed for the game: a guard, a wardrobe employee, and an entrance employee. This structured approach helped tailor the character designs to their specific functions and interactions with the player.

For each character I created 3 variations before, making a final full-body design. Each character's design was crafted with distinct yet complementary roles in mind.

Kassa (Entrance Employee)

For the entrance employee, I focused on creating a young adult male that looks approachable and welcoming, aiming to set a friendly tone as the first NPC children encounter. For the final version I focused on an open and confident pose and expressions, and a clean, polished uniform. The designs reflect professionalism but with a youthful energy, signalling that this character is there to guide and help.

Guard

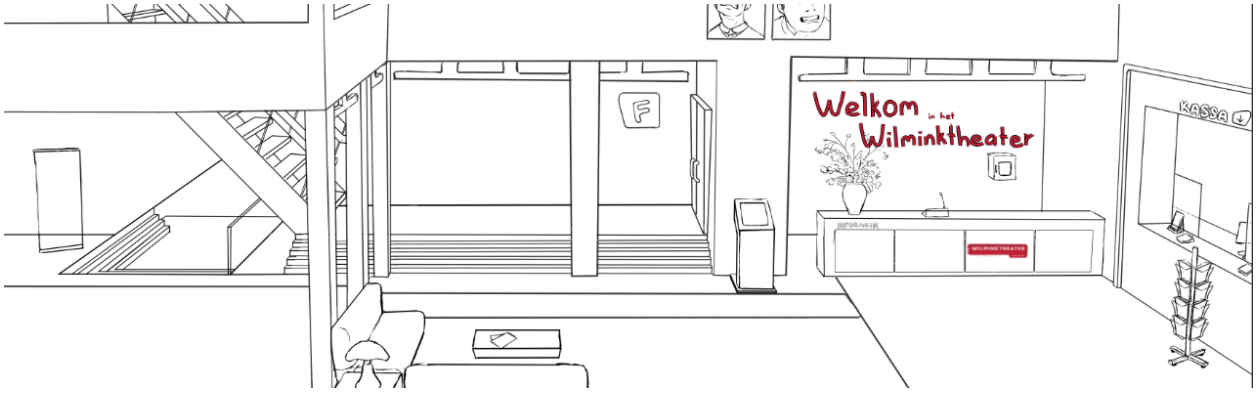
The guard's purpose is to block access to the theatre until the player completes all tasks. I designed her so she represents authority while maintaining a non-intimidating, friendly demeanour. I specifically chose a female character to break stereotypes. Trying different face shapes and features and ended up with her having a wide frame but using really soft shapes. This mad eher look strong but non-intimidating. Her wearing a uniform with the hat and details on her outfit help to immediately communicate her role to the player.

Wardrobe Employee

The wardrobe employee is an elderly woman, bringing warmth and familiarity to the character line up. Her design emphasizes gentle, kind features, complemented by glasses and a cosy sweater to evoke a nurturing persona. As an older character, she adds diversity in age, which contrasts nicely with the younger kassa employee and tall guard. The wardrobe employee's design feels approachable and welcoming, making her an ideal helper for the player as they interact with her role in the game.

Upon collecting feedback, from peers and ensuring that the characters conveyed their roles properly I also asked feedback from the client. The client revealed that while she liked the designs, Wilminktheter did not have a guard. Therefore, I would need to redesign the character outfit in the future.

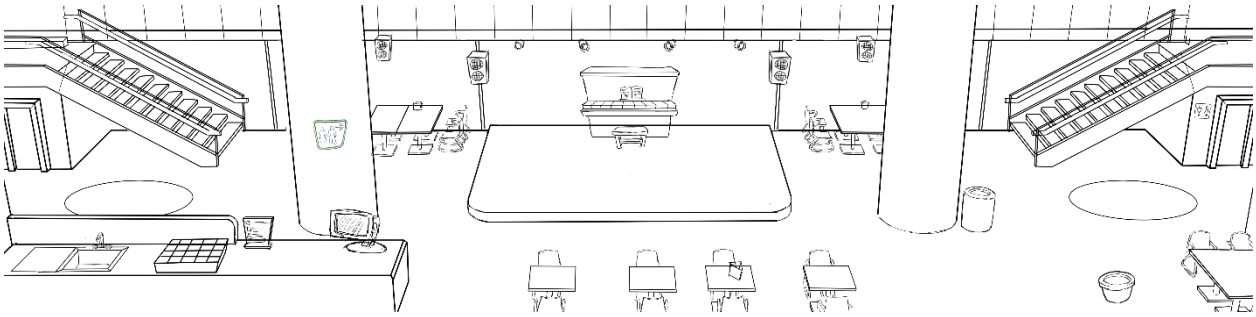
Final Sketch Creation



The final sketch creation was a critical step in the pipeline, where the selected angles from the 3D models were transformed into detailed sketches. These sketches served as the foundation for the fully rendered environment art. I focused on drawing the Main Entrance of the Wilminktheater, and its lower floor Café & Bar area.

To ensure the environments were immediately recognizable, I incorporated elements from real-life references. I added logos, furniture designs, and architectural details specific to each room. These details helped ground the rooms in reality and make them recognizable.

Details were softened and simplified to prevent visual overwhelm. For example, ornate furniture was streamlined into rounded, approachable shapes. Key features were slightly exaggerated in size or colour to draw attention to important elements and make the spaces feel playful. To achieve professional-level sketches, I focused on the line clarity to ensure the sketches had clean, deliberate lines that could guide the rendering process. Once the sketches were completed, I shared them with the team and the client for feedback. The client stated that the locations were clearly recognizable.



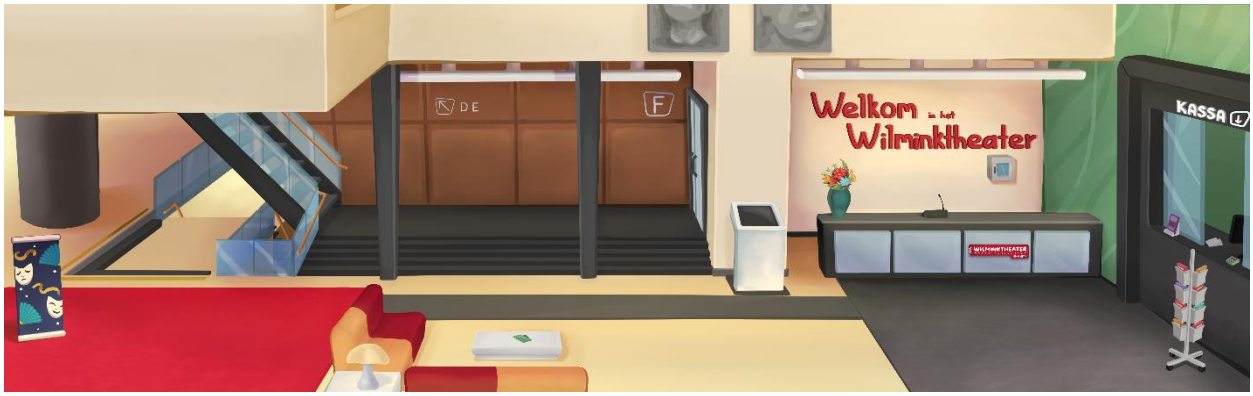
Final Environmental Art

The creation of the **final rendered pieces** of environment art was the culmination of extensive planning, research, and iterative feedback. This step focused on delivering visually appealing, functional, and polished illustrations. I drew 3 rooms; Main Entrance, 2nd Entrance, and Café & Bar Area.

For all three of them I used references collected by me in the beginning of the project, gaining insights into how lighting and colour influences. I incorporated soft, diffused lighting with warm tones to create a friendly and inviting atmosphere. Rim lighting was used strategically to define edges and make elements stand out against the background. I applied subtle, soft shadows to ground objects within the space, adding depth without overwhelming the composition. A well-balanced range of values ensured depth and visual interest while guiding the viewer's eye to key areas of the scene. The value structure helped to maintain clarity.

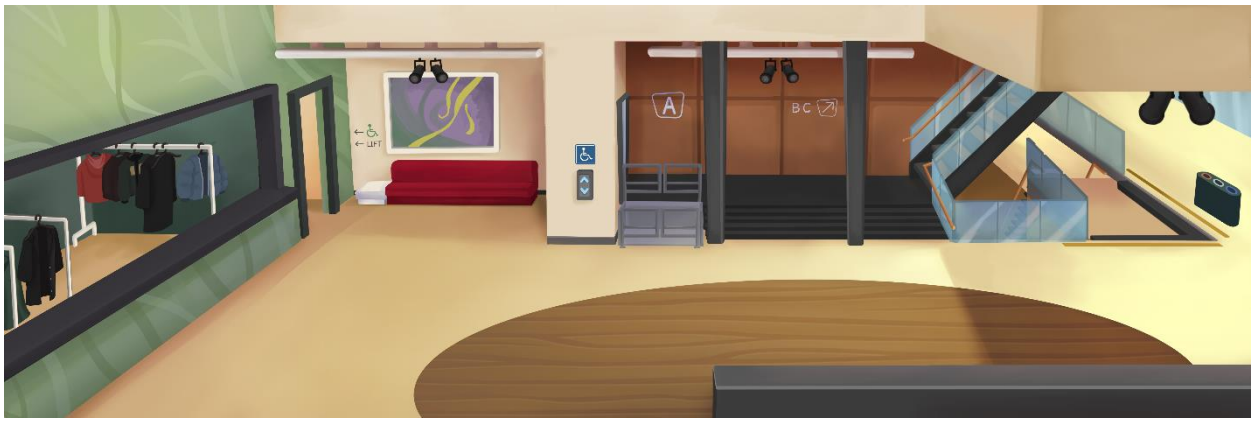
The rendered pieces were delivered in separate layers, enabling interactive gameplay elements such as characters walking behind furniture or other objects.

Main Entrance



Creating the **Main Entrance**, I initially struggled with the lighting. My attempts made the environment feel flat and uninviting. To overcome this, I took inspiration from the other artist's technique of using warmer yellow lighting to create a more inviting atmosphere. I applied a Glow layer effect in yellow tones, which significantly enhanced the feeling of warmth and comfort. Adjusting the colours was another crucial step. For example, stark white walls were softened into creamy tones to create a welcoming environment. The signage, such as "Welkom in het Wilminktheater," was carefully added to ensure recognizability while blending seamlessly with the softer aesthetic. This piece required the most iterations as it was the first one, but eventually I got to the balance of details and colours.

Second Entrance



The **Second Entrance** was more challenging as the original sketch provided by another artist lacked the proper angle and perspective needed for the scene. To address this, I flipped the final render of the Main Entrance horizontally and adjusted the perspective using a screenshot of the 3D model as a guide. This improvisation ensured consistency between the two entrances. I then added extra furniture elements, like the bench and decorative art on the walls, referencing the original sketch to maintain the envisioned aesthetic. I added a 20% Colour Burn Layer in purple tones to all the sports that go further away to create a nice balance with the light and ensure depth. This phase was particularly rewarding as it allowed me to adapt an existing asset creatively while adhering to the pipeline's goals.

Café & Bar

The **Café & Bar** was the most straightforward piece to create as, by this point, I was confident with the workflow. I purposefully left some areas open for the placement of interactables, such as the scene tables and bar items, to be added in the next development stages. This decision ensured that the environment remained functional for gameplay. I particularly enjoyed the colour composition of this piece, blending warm tones from the walls with cooler accents to create visual balance. The lighting was smoother to implement due to prior experience, and the polished shadows added depth. Overall, this piece came together efficiently and harmoniously, completing the environmental set with a cohesive style.

Final Spine 2D

Adjusting Character Art

The first task in finalizing my Spine 2D workflow was updating the previous character art to ensure it aligned with the requirements of our game. I realized that the character would need to be consistently in a **¾ view** for walking animations and other interactions to appear natural. This perspective offered the necessary depth and dimensionality to convey motion convincingly while maintaining compatibility with the gameplay style.

I began by redirecting the character's overall positioning to fit the ¾ view. This involved re-drawing individual elements such as the head, torso, and limbs to align with the new angle. These adjustments were critical in ensuring the character's rigging would result in smooth and believable movements during animation. I also prepared a few elements like hair, for testing of the skin system.

To add finishing touches to the base of the main character I rendered it more. When rendering the character, I referenced an artwork by Grafit Studios[3] to study how lights and shadows interact with round cartoony faces. I focused on soft gradients and smooth transitions to emphasize it. By that achieved a polished look that matched better with the environment and.

Customization Art

After, based on the final rendering style of the character I began creating all MVP customization elements that were established priorly. Based on the leftover time on the project I have adjusted and reprioritised some elements to be able to include some of the options from the Advanced Customization elements. Instead of creating black and dark brown colour variations for the hair, I combined them both

[3] https://www.artstation.com/artwork/VyY4Z8

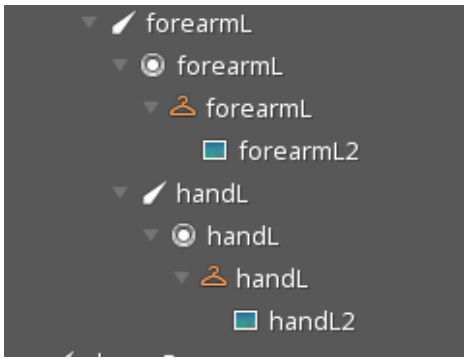
into a singular very dark brown. This defused necessary work for colouring, so I was able to split the hair variant into back hair and bangs. This was a very impactful addition to customization as instead of 4 hairstyles, it could be a choice between 16 hairstyles not including the colours with which it would become a choice from 64. From MVP parts I also created, 3 eye colours and 3 skin colours.

From the Advanced choices first thing I drew was the glasses, considering the big percentage of users. To accommodate with the hair, I added 2 shades of eyebrows (dark and light), and as a nice addition I was able to add 5 colour variations for the T-shirts.

All of these options created a diverse customization system that could create up to 54264 character variations not counting the hair colours.

Setting Up in Spine

One of its standout features in Spine is the **skin system**, which enables developers to create modular characters that can change their appearance dynamically by swapping out visual elements like hairstyles or clothes all while using the same rig and animations as long as the proportions of the body are the same.A "skin" in this context is essentially a collection of attachments grouped together for specific parts of a character.



In Spine, slots are placeholders for the visual elements. I created slots for each part of the character. Each PNG file was imported into Spine and assigned to its corresponding slot as an attachment. For example, all the hairstyles were added as attachments under the "Hair" slot.

Organizing images using Spine's skins panel, I grouped the attachments into corresponding folders. It was very important to name them properly at this stage considering the overwhelming amount of changeables. This was important not only for me, but also for the programmer who would implement this system into Unity.

Spine had a very useful feature that I learned from Armanimation YouTube channel, of Spine being able to change colours of an image. This of has it's own restrictions. The changes colour would lose the dimensionality and certain hues would become flatter. However, I was able to use this tool to apply it to the skin tones of the character. Because of its restricting nature I used it only on limbs, while the faces I repainted manually to not lose any colours. I also was able to apply this on blonde hair to create ginger and light brown hair variations without losing too much detail. Unfortunately, all the dark hair would become too flat, so I had to redraw it manually.

Once the skeleton and attachments were set up, I proceeded to animate the character. I created 5 animations in total; Idle and Walking, which would be the most important animations for the gameplay and fun animations like Wave, Jump and Dance which could be used both in gameplay and the trailer. Since the skin system only changes the appearance, the underlying animations were applied to the skeleton itself. This meant that no matter which skin was active, the same animations would work perfectly.

Preview of the Animations:
https://drive.google.com/file/d/1heeWi7WG8dCfzmnoccvDlfLzfPUb7TQq/view?usp=sharing

After setting up the skins and animations, I exported the project as a Spine JSON file along with the texture atlas and skeleton data. Spine exports the animations, attachments, and skeleton structure in a format that can be easily imported into game engines like Unity. Collaborating with our engineer, Amber, I tested the system extensively to ensure that all combinations of attachments worked seamlessly and that animations played correctly regardless of the active skin.

During the whole process I actively used the **Spine Forum**. I used multiple threads to help me understand how to structure the skins and attachments. I also use an article by **4Enjoy,** that explained the concept of linked meshes and skin customization in greater detail, making it easier to grasp how to organize assets in Spine.

The final system allows players to fully customize their characters in Unity, choosing from a wide range of options like hairstyles, clothing, and skin tones. The integration of Spine 2D and Unity ensures a smooth and efficient workflow, making it easy to expand the customization options in the future by simply adding more attachments to the Spine project.

Final NPC Character Art

To render the NPCs, I took inspiration from **Mooncolony's Clash Royale illustrations**, which combine simplistic shapes with striking use of color and shading. This reference helped me maintain the balance between a clean, child-friendly style and professional, polished visuals.

I gathered information about the uniforms at Wilminkthere. Our client shared that the staff just wears various black clothes, and badges so none of the character other than the Guard would need to be redesigned, as long as I keep in shades of black.

Entrance Employee

For the employee at the counter, I stayed within shades of black to meet the client's uniform requirements. Using Mooncolony's approach, I added soft gradients and shadows to add some detail level on his face. These techniques enhanced his friendly and welcoming aura without overcomplicating the design. His youthful appearance was further highlighted with lighter highlights on his face and warm lighting to contrast the neutral uniform tones.

Guard

The guard underwent a redesign based on client feedback. Initially, her design leaned toward a security guard, but now she wears a proper suit. The design retained personality through her facial expressions and small uniform details. The lighting and rim light effects added depth to her uniform without making it overly detailed. While her role is less clear now, her body frame still associates with a guard but aligns more properly with the client's vision.

Wardrobe Employee

The wardrobe employee's design required minimal changes due to the client's flexibility with black clothing. Her sweater and skirt were rendered in different shades of black and gray, with soft shadows to add texture and depth to the fabric. I ensured her glasses had a slight reflective sheen. Her warm and nurturing demeanour was further enhanced through soft lighting on her face and rim light effects that separated her silhouette from the background, making her stand out effectively in-game.

Concept phase

- *Video Game Design for Different Age Groups: Design considerations for diverse audiences | MoldStud*. (2024, February 3). https://moldstud.com/articles/p-video-game-design-for-different-age-groups-design-considerations-for-diverse-audiences
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Production phase

Art References:

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- https://www.artstation.com/artwork/WXlglX
- [1] https://www.artstation.com/artwork/VyY4Z8

Spine:

- https://ru.esotericsoftware.com/forum/d/4143-character-customisation-w-spine/5
- https://www.4enjoy.com/articles/character-customization-in-spine-how-does-it-work-skins-and-linked-mesh-tools/
- https://forum.defold.com/t/solved-character-customization-spine-3-questions/70981
- https://ru.esotericsoftware.com/spine-unity-attachments-and-attachmenttools
- https://ru.esotericsoftware.com/forum/d/4143-character-customisation-w-spine
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- https://www.youtube.com/watch?v=WAzVsoCLZYY&ab_channel=Armanimation