



Designing Outdoor Play & Learning Spaces with Children: Processes & Lessons from a Schoolyard CoDesign Program

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Opening Activity: Rapid Design

Prompt: A schoolground playspace for 7–12 year olds (bounded as seen on the page ~ 200ft x 75ft) is going to be redesigned. Draw & label the ideal outdoor playspace you would design for this space

5–7 min

Identifying Design Priorities

Consider what play elements AND experiences are included or reflected in your design

EXPERIENCES ARE...

Potential **actions, activities or functionalities** of a space. We often describe experiences using verbs ending in “-ing”)

Examples:

- sliding (or sliding fast!)
- sitting with friends
- running, jumping
- using secret passageways or hideouts

ELEMENTS ARE...

Physical features, objects, or spaces. (these are generally nouns).

Examples:

- slides
- benches
- open grassy area
- tunnels

Opening Activity:

- Identify your Top 3 Play Elements & Top 3 Play Experiences
- Write each priority on a separate post-it (should have 6 in total)
- Then scan the QR codes and input the Top 3 Play Elements (then Experiences)

Input Top 3 Play Elements &
Top 3 Play Experiences
(separately)

**Submit responses to:
Poll Everywhere**

Join by Web

PollEv.com/decalab

OR Scan QR code

Join by Text

Send decalab and your message to 37607

Word Cloud Share

Opening Activity:

What are the advantages of having children draw their 'ideal playspace' when trying to understand their play preferences and priorities?

Opening Activity:

What are the **DIS**advantages of having children draw their 'ideal playspace' when trying to understand their play preferences & priorities?

‘Participatory Design’:

Often an ideal playspace design is the ONLY type of engagement designers or community organizers will conduct with child users...

... it can provide some insights but tends to stay more at the ‘cotton candy fountain & rollercoasters’ level AND/OR reflects primarily what they already have or are familiar with

Participatory Design:

When given the right opportunities, tools & time...

... children show themselves to be savvy, practical but also innovative designers

... insights into design priorities will be more substantial, informative and reflect a greater diversity of voices

Participatory Design:

but how do we do it... genuinely, ethically & effectively?

Workshop Goals

- 1 Review the aims & benefits of co-design processes with children
- 2 Demonstrate a co-design program with children via a case study of a schoolyard renovation project with Gr 5 students in Ithaca, NY
- 3 Illustrate how to synthesize co-design activities to understand children's design priorities and translate them to design

Participatory Design

“Activities where users, designers, and researchers collaborate toward shared goals”
(Bødker et al., 2022)

Broader set of participatory processes

Co-Design

Form of PD centering on creative activities where designers and users partner to develop designs
(Bødker et al., 2022; E. Sanders & Stappers, 2008)

More specific participatory approach

Why Co-Design?

Democratizing Design

PD **originated in Scandanavia worker's movement** (1970s) – goals of **democracy, mutual learning, and empowerment** (Spinuzzi, 2005). It's now applied in diverse contexts, including healthcare, community, and cultural settings.

Everyday Experts

PD and co-design recognize **expertise** as something **not limited to credentialed professionals**, but as something inherent to users, community members, and stakeholders (Sanders & Stappers, 2008).

Uplifting Marginalized Voices

Co-design offers valuable tools for uplifting voices of marginalized **groups like children** who are often **neglected or misunderstood** in traditional **design** (Can & Inalhan, 2017).

Co-Design with Children

Co-design with children:

- an **inclusive approach** to group decision-making that aligns with the UNCRC tenet that **children have the right to participate** in matters that directly affect them
- promotes **children as collaborative partners** throughout the design process

Benefits:

- professional designers or community organizers benefit from **encountering child users' design ideas and priorities firsthand**
- children have been shown to contribute **unique and innovative ideas**; often more **inherently inclusive**
- offer children **unique developmental & learning experiences** including design thinking, consensus building & community decision-making processes, civic engagement and effective teamwork
- Engagement of children in design planning and decision-making has been shown to promote a **sense of communal belonging, self-efficacy, and subjective well-being**

Challenges:

- **managing roles & expectations** of child participants
- supporting their ability to be **informed designers**
- **translating children's ideas & designs** into a single design plan

What are we trying to achieve?

Understand what existing elements and experiences are liked and disliked by participants

Encourage participants to think outside of the box when brainstorming possibilities

Help participants to work together to create design plans that cater to diverse opinions and values

Learn more about the psychology and reasoning behind why participants value certain elements and experiences

Encourage and foster empathy in co-designers when helping them create their design decisions

Encourage an iterative design process informed by diverse research and visioning activities

Present the design process to participants in a digestible and engaging manner

Foster a sense of responsibility and pride among participants for their involvement in the co-design process

Teach and help participants to visually present and articulate their design ideas & priorities

Translating Data to Impact

Before Starting Co-Design...

Have a plan for how you will collect and synthesize information generated from co-design. There may be a large amount of data that harbor valuable insights (e.g. discussions, drawings, photos, sticky notes) - a consistent, unbiased synthesis plan is necessary.

Ask yourself:

- How will we organize and understand all this data?
- How will we translate what we learn from participants over to stakeholders and into final design?
- How can we avoid infusing our own bias into the conclusions we draw?
- How can we balance depth with practicality and purpose so participants' visions can become reality?

Co-Design Analysis is Challenging

It can be **challenging to distill the complex and varied outputs** produced during co-design projects into **meaningful design direction**, and there are few existing tools to support this analytical process. We provide some **recommendations in the Playbook** to help add clarity and organization to this process.

A Well-Organized System Can Help

To accurately reflect participant priorities and preferences, we take a **systematic approach**. Our recommendation is to apply the **lens of “elements” and “experiences”**.

Identifying Design Priorities

All co-design activities should seek to elicit participants' priority **experiences** and **elements**.

EXPERIENCES ARE...

Potential **actions, activities or functionalities** of a space. We often describe experiences using verbs ending in “-ing”)

Examples:

- sliding
- sitting with friends
- running
- using shortcuts or secret passageways

ELEMENTS ARE...

Physical features, objects, or spaces. (these are generally nouns).

Examples:

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- benches
- open grassy area
- tunnels

Experience-centered Synthesis

1

IDENTIFY PRIORITY ELEMENTS & EXPERIENCES



At the end of major co-design activities, carry out a **SYNTHESIS EXERCISE** that allows participants to surface important elements and experiences that emerged. You will **find details in the activity descriptions** of how to do this.

2

IDENTIFY UMBRELLA EXPERIENCES



Once you have done a couple synthesis exercises, it's time to start looking for **higher-level categories** ("umbrella experiences") that priority elements and experiences can be grouped into. "Towers," for example, might fit under the umbrella experience "Being high up." See **Activity O** for details.

3

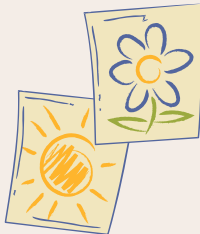
PRIORITIZE UMBRELLA EXPERIENCES



The next step is knowing which umbrella experiences are most important to participants. We outline three prioritization techniques - frequency counts (see **Activity O**), Q-Sort mean scores (see **Activity R**), and team "Top 5 Experience" frequency (see **Activity U**). Use multiple techniques if possible.

4

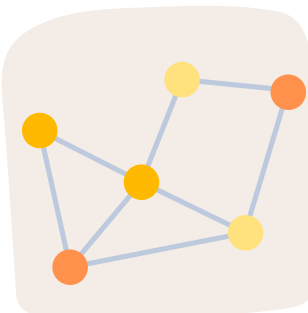
INTEGRATE RICH QUALITATIVE DATA



Ensure you understand and can meaningfully convey **what these umbrella experiences mean**. Use **photos** and **drawings**, **participant quotes**, and "thickly described" **context** from your interactions to flush out your findings and add depth to umbrella experiences (see **examples at end of Playbook**).

5

CONNECT THE DOTS



Connect the dots between your **quantitative measures of priority** ("what" is most important) with the **qualitative data** ("why" are these things important and what additional context should we consider). This "triangulated" approach increases facilitator and stakeholder confidence in conclusions.

6

DEVELOP DESIGN RECOMMENDATIONS



Co-design deliverables center around participant-generated works, but to aid in translation of this work, facilitators should **synthesize information in a digestible way**. One form this can take is design recommendations (see **examples at end of Playbook**).

Benefits of System



HIGHER CONFIDENCE

A systematic approach that combines quantitative prioritization with deep qualitative insights helps us convey an accurate picture.



HIGH & LOW LEVEL

Moving between detailed/ deep information (e.g. specific elements, drawings, or quotes) and higher-level (e.g. umbrella experiences) provides a holistic view.



LIMIT BIAS & THINK ITERATIVELY

Our human brains have their limits when it comes to holding large amounts of information, especially without infusing our own biases. A systematic approach can help us keep track of knowledge generated and encourages us to iterate our understanding over time.

This **Co-design Playbook** provides activities for three different-length co-design programs

Co-Design Program Roadmaps

3 SESSIONS

Our **3-session program** includes:

- **Introduction & Orientation**
 - ACTIVITY A: Co-Design Orientation
 - ACTIVITY B: Design Team Formation
- **Evaluation & Data Collection**
 - ACTIVITY D: Drawing Ideal Playspace
 - ACTIVITY F: Photovoice
 - ACTIVITY K: Dot Democracy & Ranking*
 - ACTIVITY L: Informing Co-Designers 1
- **Design Development & Priority Synthesis**
 - ACTIVITY O: Bubble Diagramming
 - ACTIVITY P: Priorities Review (Summary)
 - ACTIVITY Q: Initial Design Development
 - ACTIVITY T: Final Design Development
 - ACTIVITY U: Presentations
- **Translating Program Outcomes**

* can be carried out during Activity K or Q

5 SESSIONS

Our **5-session program** includes:

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 - ACTIVITY A: Co-Design Orientation
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10 SESSIONS

Our **10-session program** includes:

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CASE STUDY OVERVIEW

FCE Playground History

Fall Creek Elementary:

- K-5 school in Ithaca, NY
- ~ 250 students
- has both a 'younger' and 'older' student playground

Existing 'Older' Playground (7-10 year olds):

- comprised of several play areas, but centers on an expansive, bespoke wooden play structure designed by Leathers Playgrounds
- built in 2001 as a community-built project
- holds significant functional & sentimental value for the school and the community
- wood elements have substantially deteriorated, causing issues such as splintering wood, broken spindles, worn surfaces and potential structural instability --> majority of the structure requires replacement



Play structure built in 2001 with Leathers Playgrounds

A student- and school- engaged co-Design process offered an opportunity to collaboratively envision a new and novel play space which will also feel like a special part of the Fall Creek community.



climbing feature

swings

wooden play
structure

garden
beds

theater

swings

basketball
courts

asphalt surface

grass field



PROJECT PHILOSOPHY

We started by asking the children....

**Do children usually get to be involved in the
design of spaces at their schools?**

Why or Why Not?

Do children usually get to be involved in the design of spaces at their schools?

- *NO!*
- *Because they think that kids can't really do that much stuff*
- *Kids don't really have much power in the world*
- *Because we are elementary schoolers and we're younger than them... they're adults and so... [shrugs]*
- *They probably think kids don't know enough to make it safe*

**Do you think kids should have a say in how
their schools / schoolyards are designed?**

Why or Why Not?

Do children usually get to be involved in the design of spaces at their schools?

- *Most agreed kids should be involved...*
- *But a few said 'No':*
 - *Because kids are going to want something that will benefit them and they won't think of the greater value or other kids' interests*
 - *I've seen other kids designs and they are insane... like, what they want the playground to look like... like, one kid wanted a fighting arena!*

We agree!
**There are many good reasons why
children should be involved...**

1. It is your **right to be involved!**

The United Nations said that children have a right to be involved in decisions that affect their lives... including decisions about the environments – like school playspaces – that they use every day



Degrees of Child Participation

Students come up with a need or a plan. They convince adults to support and or finance. Together they decide and realize.

8

Student-initiated. The decisions are shared with adults.

Students have an idea and voice it. They take the initiative and bring their plans to a result.

7

Student-initiated and directed.

A new school yard is planned. Students are not only consulted but can also decide on some of the details.

6

Adult-initiated. The decisions are shared with students.

Before a decision is taken, adults consult with students. Their opinion and proposal are taken into consideration.

5

Students are consulted and informed.

A task (for instance community work) is given to students with no choice to agree or disagree. But they are informed and know the cause.

4

Students are assigned but informed.

A selected group of students (maybe a minority) is given a possibility to represent 'their cause' without having a say, without preparation. They serve to show political correctness.

3

Tokenism: Symbolic integration (of minorities).

Students are prepared to appear maybe in costumes carrying flowers or flags. They make an adult event (even a student's rights day) look nice or student friendly.

2

Decoration: Students are used.

Students are part of a political event. They might carry placards with paroles. They wear the colours of a party or a movement.

1

Manipulation: Students are misused.

Non-Participation

Ladder of Participation

There are many good reasons why
children should be involved...

2. Kids are the experts in what kids want (& don't want)!

*Children are the **main users** of play spaces - they know best what is fun and interesting (and what is dull and boring) ... and so are the best source for design ideas*

**There are many good reasons why
children should be involved...**

3. Kids come up with more imaginative & inclusive ideas!

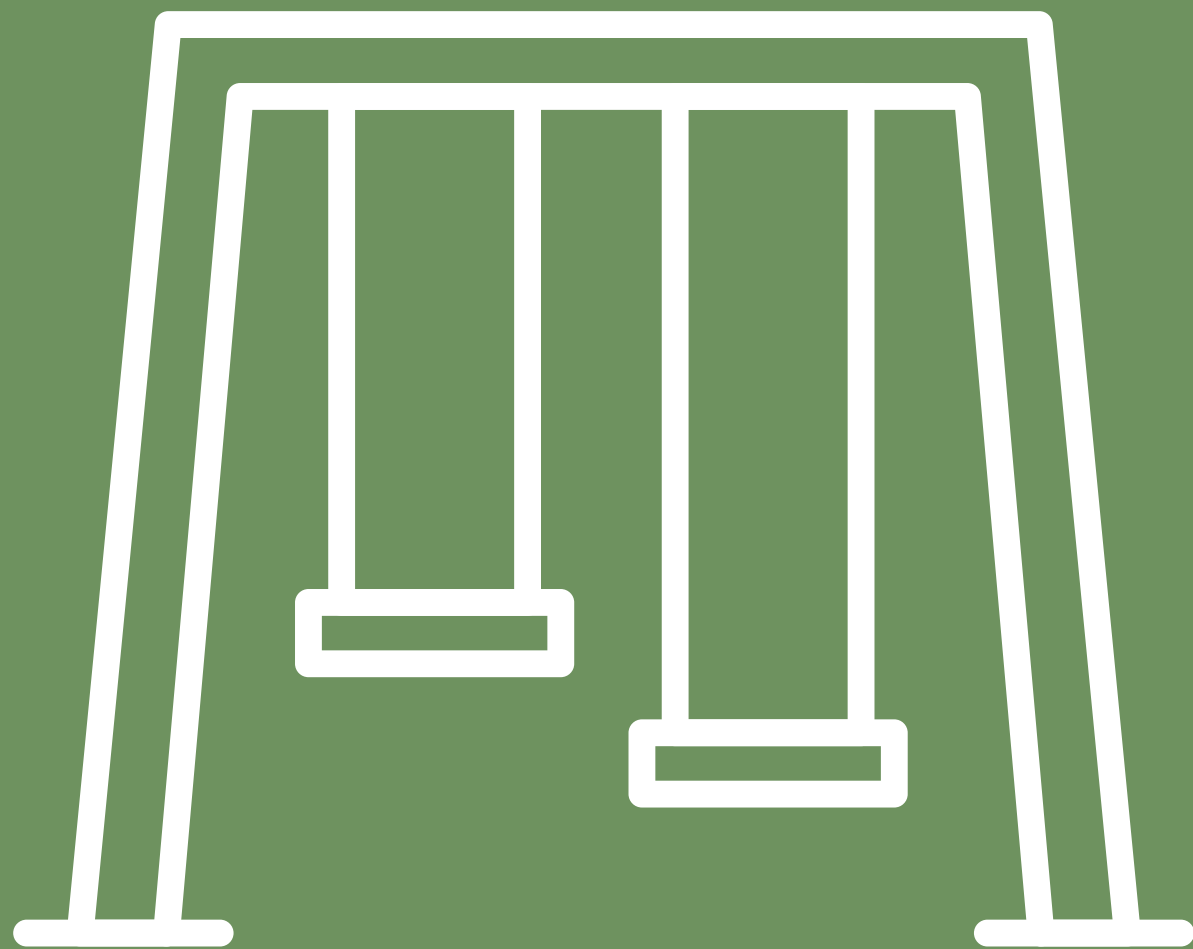
*Children are better at thinking 'outside the box' and often think of
good ideas that adults don't.*

*Children often come up with ideas that provide for opportunities
they think would be important to OTHER users*

Then we asked....

**If you are going to help co-design the new
outdoor playspace...**

- **Who else** might you need to think about?
- Do you **already know everything** you need to know about how to design a **good play space**?
- What are some **other things** you might need to know or learn?



CO-DESIGN PROCESS & ACTIVITIES

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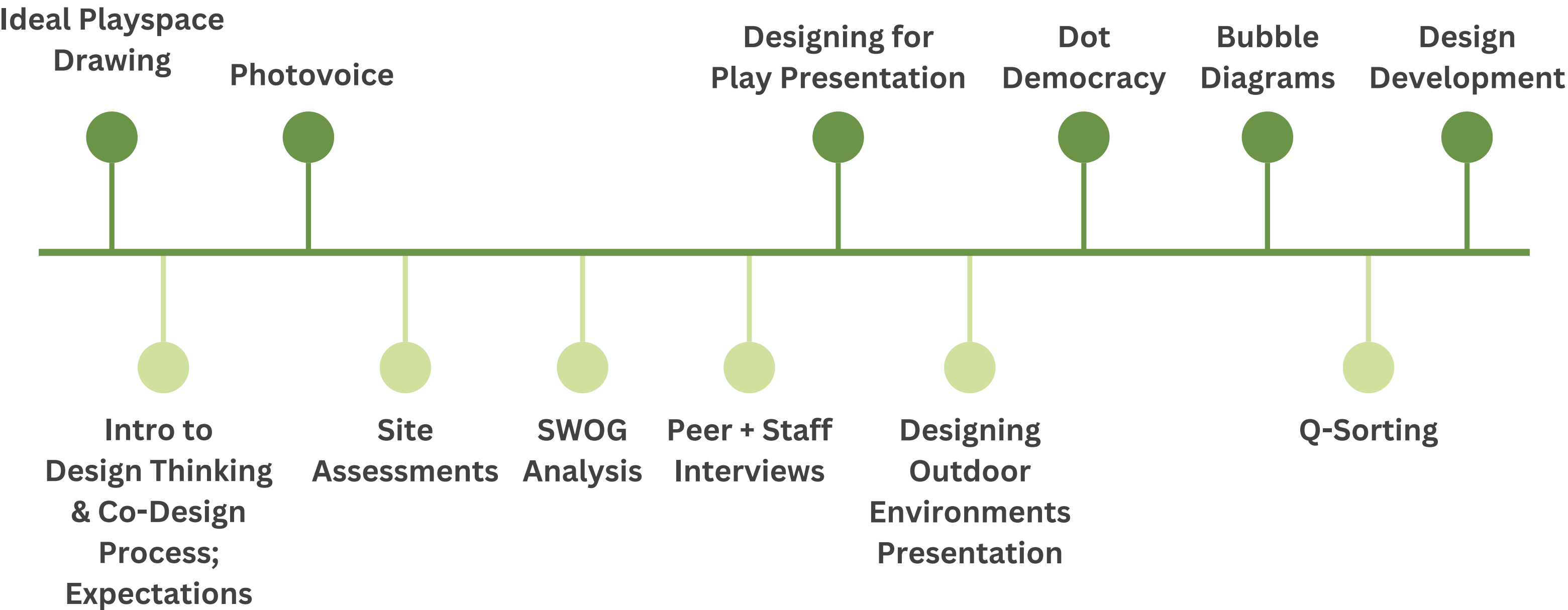
10 SESSIONS

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Co-Design Activities

- 10 Session Program
- 3 Session Program



Capturing Both Experiences & Elements

All activities seek to elicit (and document) the children's priority **play experiences** and **play elements**

EXPERIENCES ARE...

Potential **actions, activities or functionalities** of a space. We often describe experiences using gerunds ending “-ing”)

Examples:

- sliding
- sitting with friends
- running
- using shortcuts or secret passageways

ELEMENTS ARE...

Features, physical objects, or spaces.
(these are generally nouns).

Examples:

- slides
- benches
- open grassy area
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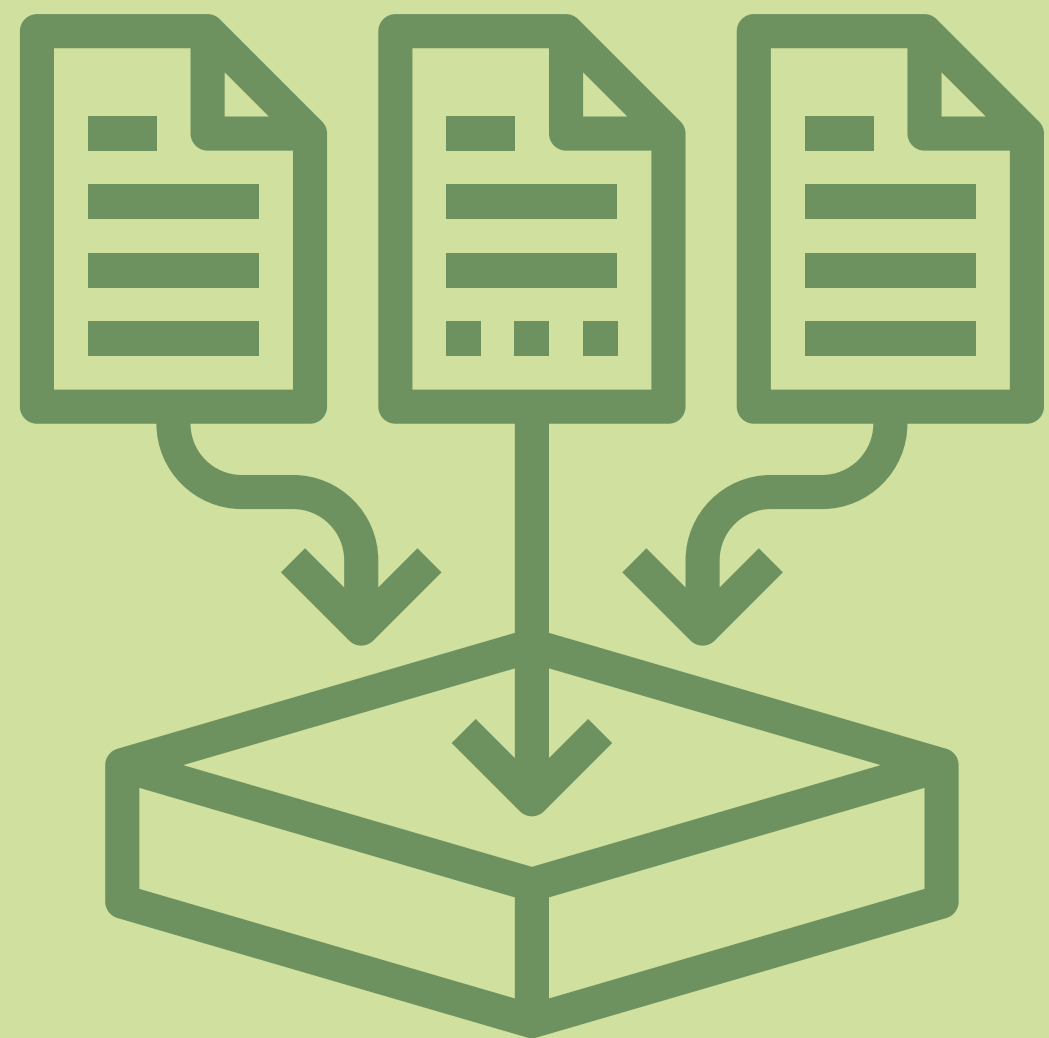


Introduction & Orientation Activities

Introduction & Orientation

Activities

1. **Introduction to Design Thinking** - Rapid prototyping exercise to introduce design thinking process
2. **CoDesign Introduction** - What is CoDesign? What are the opportunities and expectations associated with CoDesign?
3. **Project Introduction** - Introduce & discuss aims, expected outcomes & benefits of project; Discuss opportunities & constraints
4. **Roles & Design Team Formation** - Role & responsibilities of children as co-designers; divide into Design Teams; encourage development of team name, logo and/or participant roles



Evaluation & Data Collection Activities to Inform Design

MY IDEAL PLAYSPACE

Below are a selection of drawings from Class 2 and their key elements and experiences

places to hang out & talk

basketball, gaga ball, dodgeball

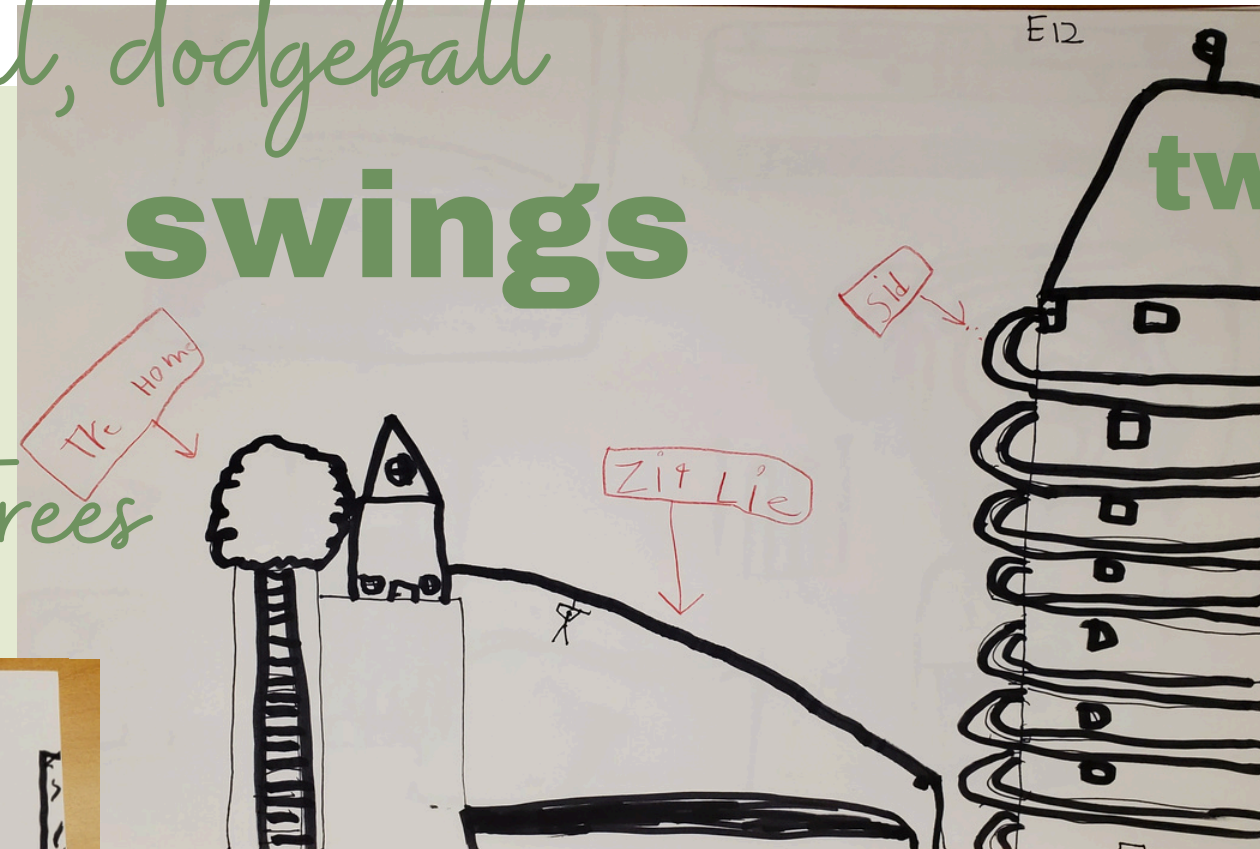
places to jump off of
or in to

bunch of trees

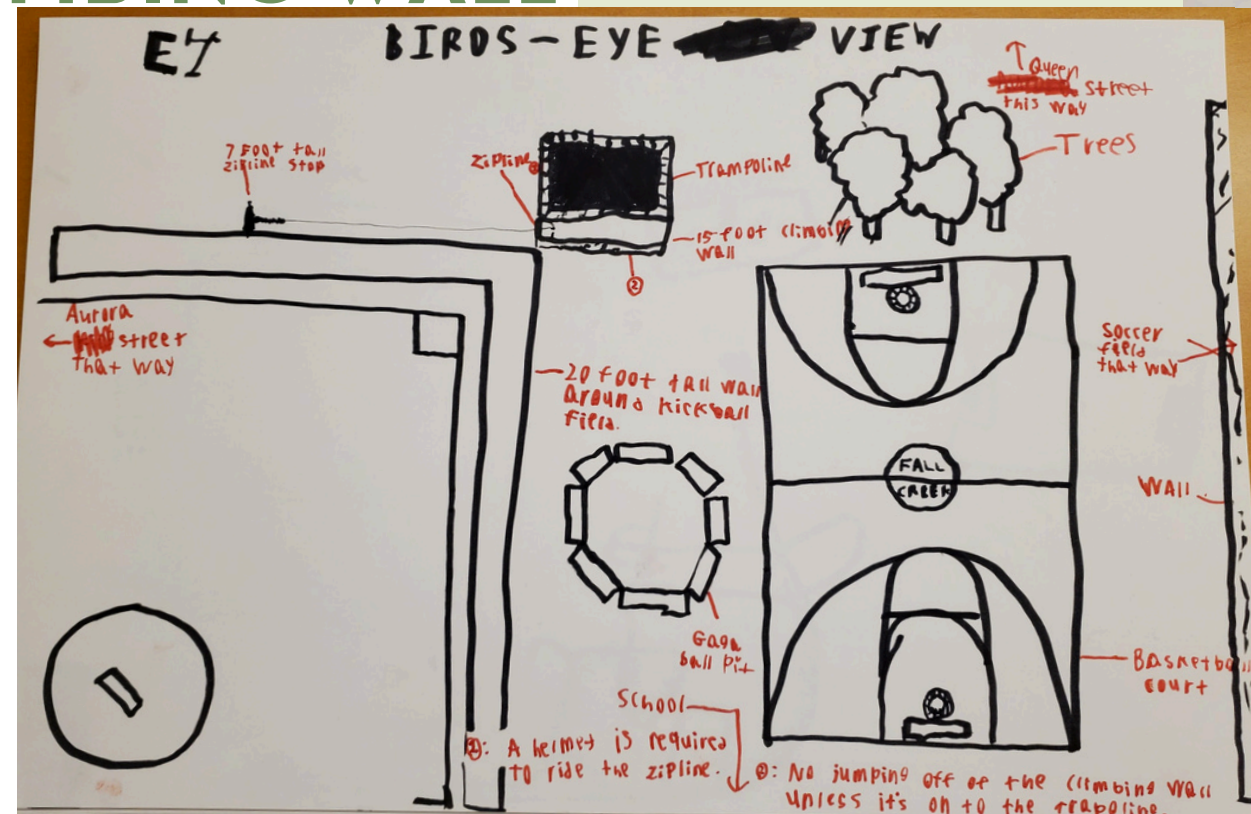
swings

high &
twisty slides

CLIMBING WALL



zipline



SOCCER
PITCH

trampoline

towers & lookouts

Tunnels & maxes

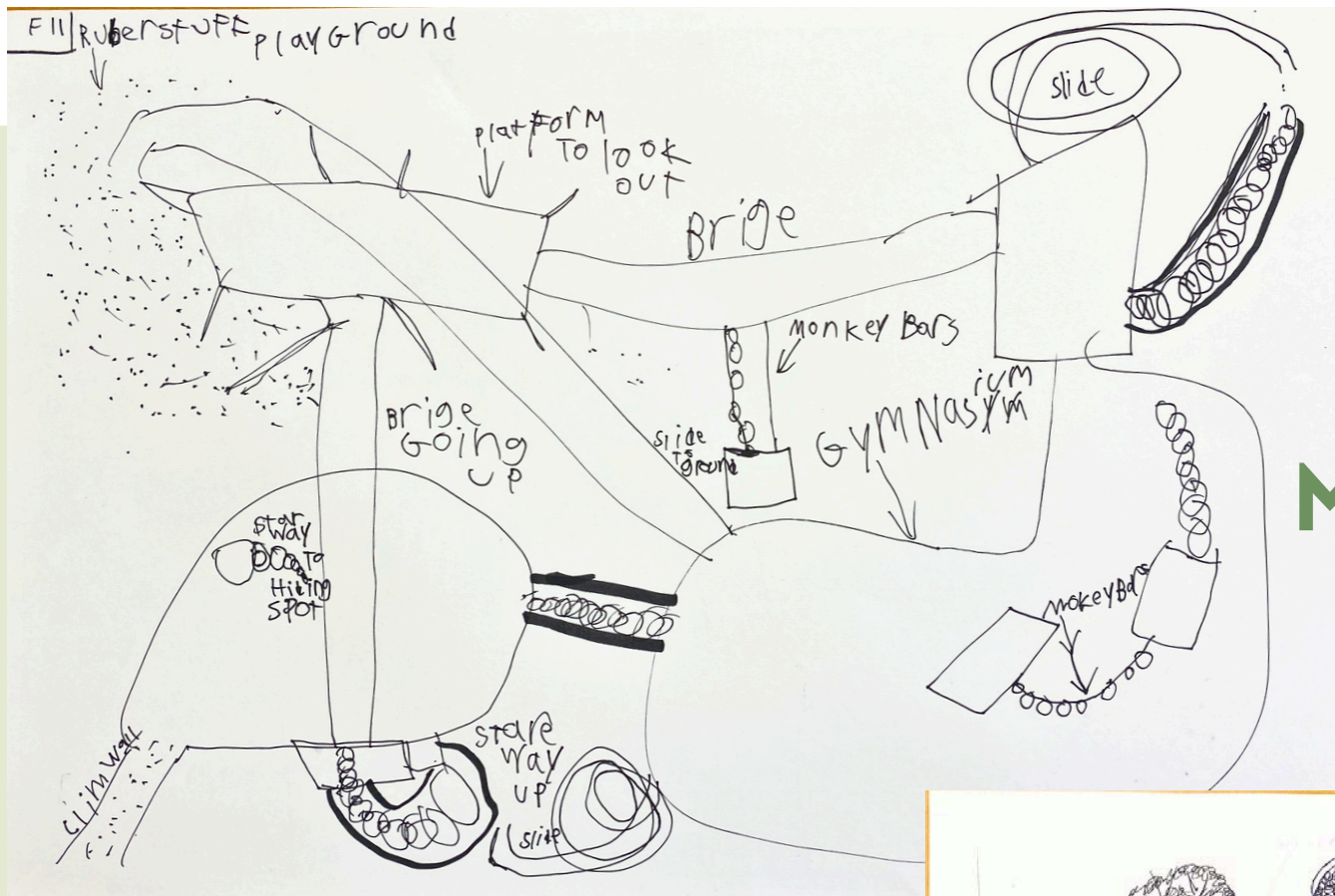
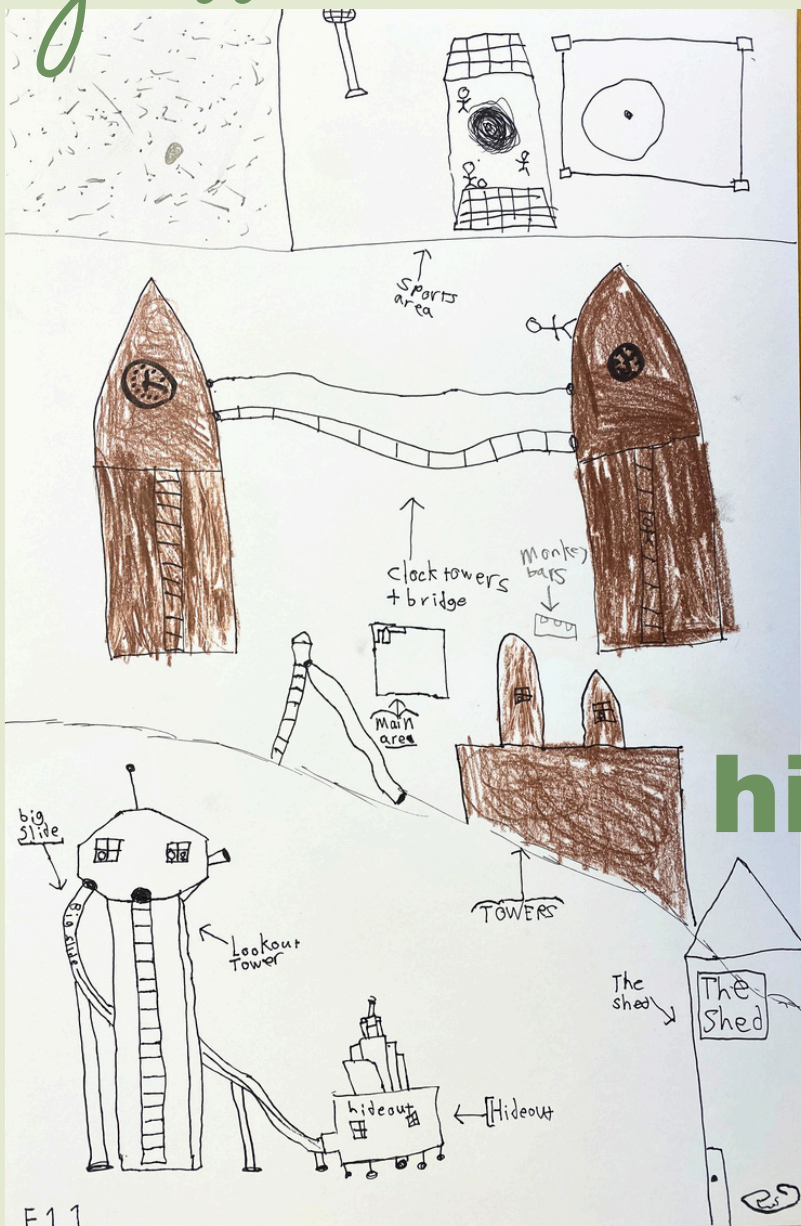


MY IDEAL PLAYSPACE

Early on in the process, children were given the opportunity to make individual drawings of their ideal playspace, and annotate the key elements or experiences. Below are a selection of drawings from Class 1 and their key elements and experiences

cosy nooks

grass



shade

tunnels

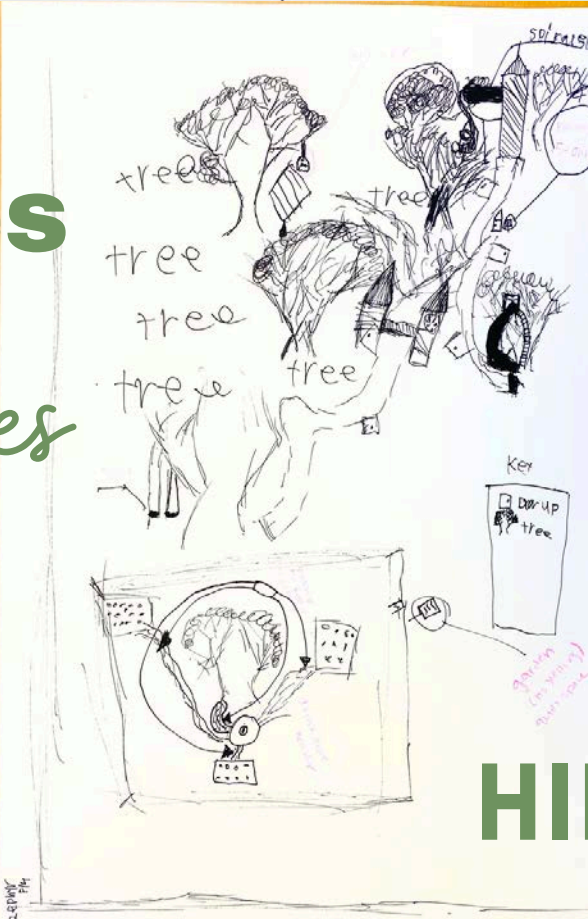
MONKEY BARS

quiet gardens

high & twisty slides

Tables & benches

trees



swings

bridges

HIDING PLACES

towers & lookouts

PHOTOVOICE: Sharing What We Like and Dislike about the Existing Playspace

Students were asked to use captioned photographs to highlight what they like and dislike about the current playground. They were given “frames” with a green side (“we like this”) and a red side (“we don’t like this or want this improved”) then took and shared photos to illustrate their preferences.

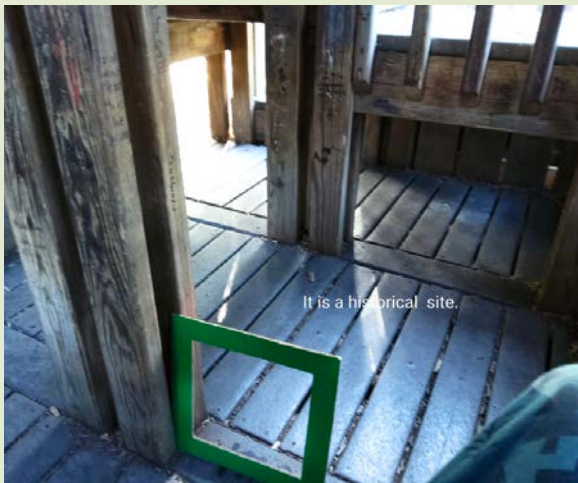
Here are a few notable responses from Class 1:



“I like it because it is often quite quiet so I can read/draw.”



“It is the foundation of the playground. We jump off it.”



“It is a historical site.”

Likes

- Covered and hidden areas for quieter activities but also for active games like hide and seek
- Play features that allow for risk-taking and dynamic forms of play - such as being high up
- Fun or ‘secret’ shortcuts between different areas
- Elements of playground that instill a sense of connection and community identity

Dislikes

- Play elements that currently limit more thrilling and challenging play experiences
- Physical barriers that hinder social interaction and spontaneous or open play
- Certain play elements that are perceived as unsafe and create apprehension



“We want more turns and speed.”



“We want it to be more open. No fences.”



“You could fall into it and get hurt.”

PHOTOVOICE: Sharing What We Like and Dislike about the Existing Playspace

Here are a few notable responses from Class 2:



“The awesome awesome bridge is so cool - people jump off of it”



“We like this monkey bar slide because we can slide down and climb up”



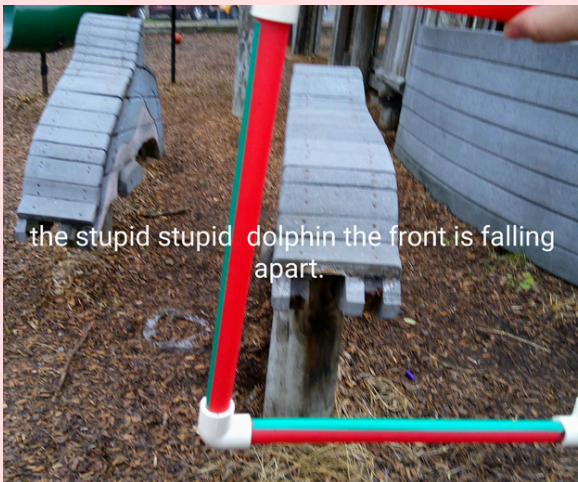
“The soccer field is awesome. Keep it”

Likes

- Challenging elements like the high bridge
- Places for swinging, sliding and climbing like the swing structure and slide tunnel
- High up, connected elements like the bridge between clock towers that allow movement at different levels
- Soccer pitch very popular

Dislikes

- Thematic elements like the boat and dolphins are boring, in poor shape - “just take up space”
- Elements that are ‘too young’ for them
- Loss of shortcuts or ability to quickly move between areas
- Elements that need to be repaired or replaced like



“The stupid, stupid dolphin. The front is falling apart.”



“No one plays tic-tac-toe and its just boring.”



“We want the fence to be open so we can climb through and get in rather than going all the way around”

Designing for Play Presentation: Good Play Spaces Tend To...

Students were exposed to play concepts or opportunities that tend to be present or supported in 'good' playspaces. The next two pages illustrate opportunities found in many diverse and compelling playspaces that appeal to a broad range of children of diverse ages & abilities.



Allow for many different activities and experiences

- From more active/louder to slower/quieter activities
- Features that can be used in multiple ways
- Variety in size, height, and challenge levels

Have gathering and activity spaces of different sizes

- Spaces for individual, small, and large groups
- From spaces that are small & cosy to large & open

Have spaces and features that provide variety or can change

- Provide loose or moveable parts
- Variety in the ground levels or changes of view
- Provide different opportunities in various weather or seasonal conditions

Provide shelter, seating, and shade

- Shelter from weather
- Places to retreat
- Interesting seating designs; Seating that can be used for play
- Places to sit for different group sizes

Designing for Play Presentation: Good Play Spaces Tend To...



Be beautiful, fun, and interesting

- Provide variety through color, art, sound, texture
- Beauty and whimsy through materials, patterns, and shapes
- Allow for exploration, discovery, and surprise



Separate activities BUT ALSO connect areas with pathways

- Loud/active from quiet
- Clear boundaries through edges, ground surfaces, visual separation
- Paths connecting all activity spaces
- Paths that range from wide to narrow



Include natural elements and materials

- Vegetation through trees, flowers, gardens
- Natural ground surfaces, materials, loose parts
- Variety of textures
- Provision for habitat for birds, bugs and butterflies



Tell a story about the creators or users, or communicates a special meaning

- Murals, sculpture, art
- Signage or identity markers like logos, names

Outdoor Play Types

Outdoor play spaces aim to support the play and social activities of children, yet often their designs do not provide opportunities for the full spectrum of outdoor play experiences. The Outdoor Play Typology depicted below outlines 8 key types of play in which children engage and which support their healthy development. Playspaces should aim to cater to all outdoor play types. Students were introduced to these play types and sought to consider them all in their design visions



Physical Play

Play that is very physical in nature. Requires using / moving your body

Running / Climbing / Cartwheels / Spinning / Throwing / Kicking / Sliding / Swinging



Exploratory Play

Play where you use your senses to gather information, manipulate or build with objects or environments

Splashing Water / Collecting Rocks & Leaves / Using Sticks for a Fort / Setting Up an Obstacle Course



Imaginative Play

Play activity that involves any element of pretending or imagination

Pretending a stick is a 'Phone' / Playing House / Pretending to be Superheroes, Pilots, or Princesses



Play with Rules

Play or games that involves rules everyone knows or rules you make up

Playing Hide N Go Seek / Tag / Tug of war / Four Square / Soccer / Basketball / Invented or Adjusted Games



Loebach, J., Cox, A., (2020). Tool for Observing Play Outdoors (TOPO): A new typology for capturing children's play behaviors in outdoor environments. International Journal of Environmental Research and Public Health, 17(15)



Bio Play

Focused attention on or playful interaction with a living plant or animal

Picking Flowers / Rubbing a Fuzzy Leaf / Chasing Butterflies / Looking for Bugs, Worms, and Caterpillars / Caring for an Animal or Plant / Searching Under Logs or Stones for Bugs



Expressive Play

Play that involves creating or expressing yourself

Performing a Song or Dance / Creating Drawings or Art / Making up Jokes or Rhymes / Having a Social Conversation with Friends / Making an Artistic Pattern in the Dirt or Sand / Weaving a 'crown' of Flowers / Playing an Instrument



Restorative Play

Play that involves resting, taking a break or engaging in quiet activities

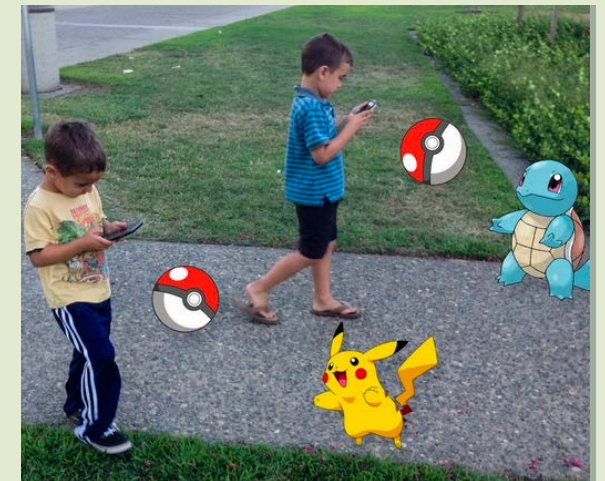
Laying on the ground watching the clouds / Daydreaming / Reading / Watching Others / Sitting Away from others in a small space / Resting



Digital Play

Play with a portable digital device or digital devices embedded into playspace

Playing games on a phone or tablet / Augmented Reality Games Like Pokemon Go / Musical or Light Sensors Embedded in the Playspace That Activate When You Pass By



PLAYSPACE PREFERENCES:

Dot Democracy

Students were individually able to vote for the play elements and experiences they most wanted. Each student was given 8 stickers and was told to place a sticker on 8 out of the 29 slides of outdoor play elements. These are the tallied results of the elements with the most and least votes. The number on the photo indicates their rank out of 29. These are the combined votes for Class 1 and 2.



36 Votes

Tower
Bird's Nest
Climbing Ramps & Bridges
Net Tunnels



28 Votes

High Play Tower
Multiple Platforms/Levels
Large & Twisty Slides
Lookout Points



27 Votes

Trampolines
Wobble Boards
Boogie Boards



24 Votes

Spinners
Merry Go Rounds



23 Votes

Sport Courts
Basketball Court
Soccer Pitch/Field
Multi-Sport Court or Field



15 Votes

Group Swing
Swining Platform

Top Vote Notes

- Students liked novel shapes such as the twig hut in photo 1 or the multiple hexagon trampolines in photo 3.
- Photos 1-2: Students liked the ability to be 'high up' & the idea that when you climbed to the top there were various platforms to stop along the way. at the high slides they could take down.
- Photo 4: While some students liked the spinners solely for spinning. Others stated that it could be used as a 'base' or 'jail' for other games.
- Photo 6: Students stated that there were not enough swings for everyone on the current playground.



Photo was favored over other photos on the board



24

2 Votes

Rope / Net Ladder / or
Chimney



25

2 Votes

Climbing Structures
Log / Bar / Rock Structures
Net Climbers & Bridges
Obstacle Course



26

2 Votes

Climbing Wall / Climbing
Post
Climbing Stumps
Tower / Lookout



27

1 Vote

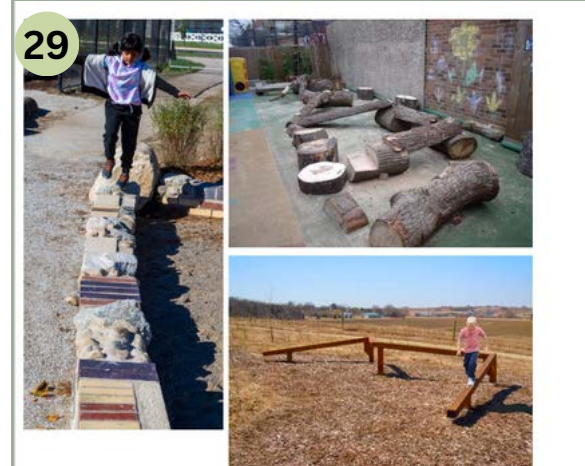
Chalkboards / Chalk Wall
Paint & Art Boards
Art Materials



28

1 Vote

Loose Parts for Building
Logs, Sticks, & Branches
Loose Pipes



29

1 Vote

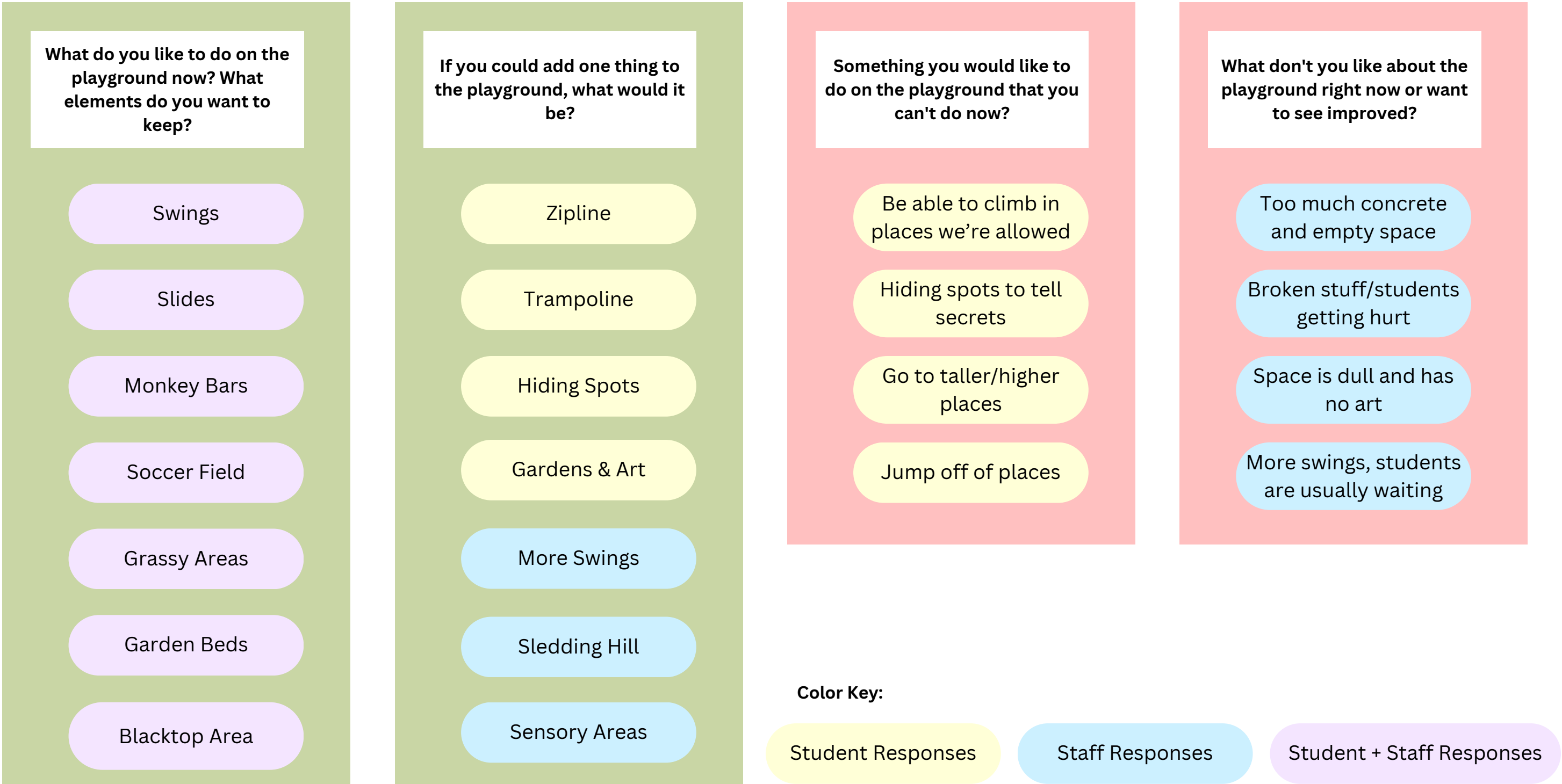
Playful Pathway
Uneven Path / Ledge
Obstacle Courses
Balance Beam

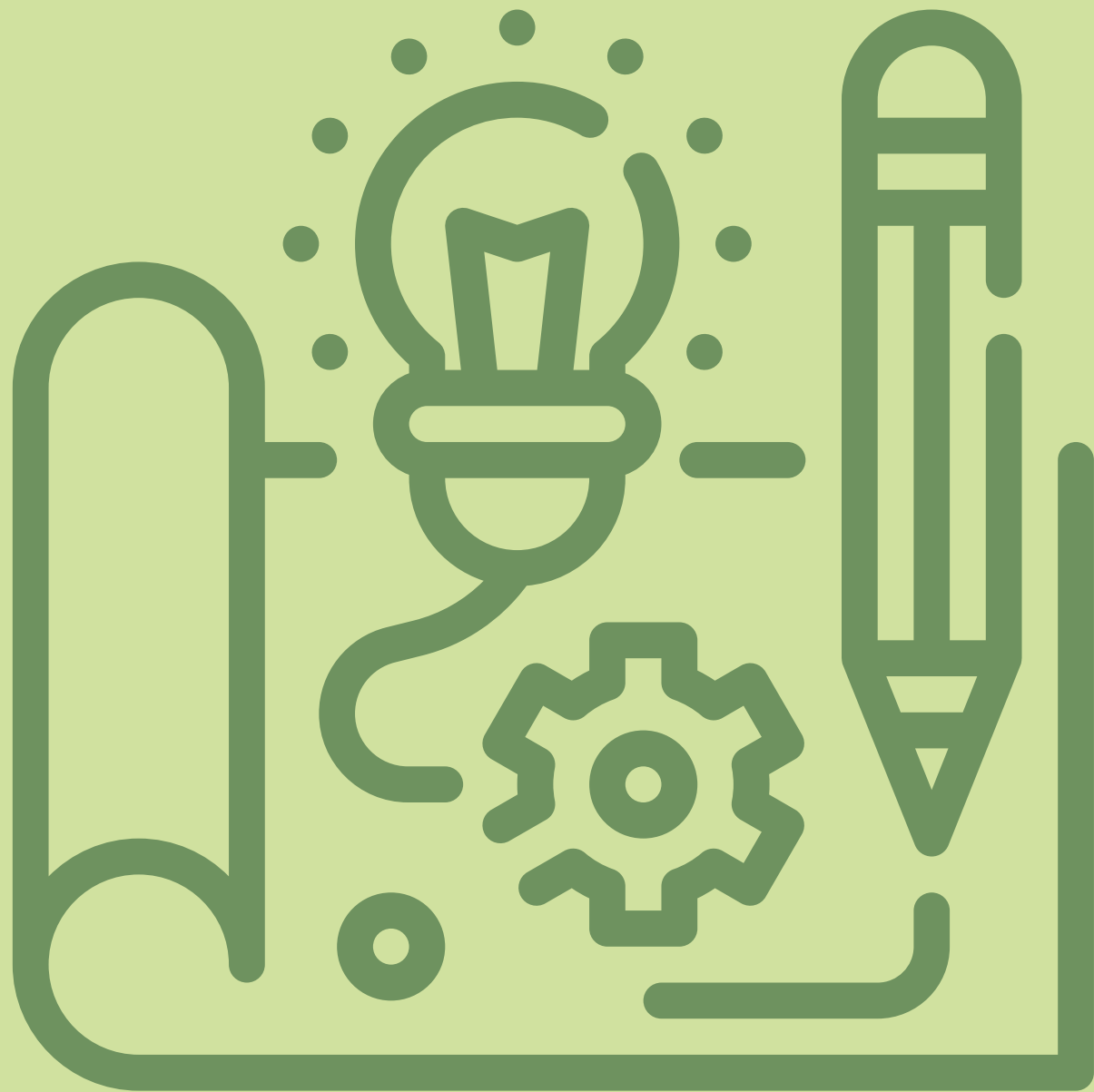
Low Vote Notes

- Photo 25, 26, etc: For climbing structures students felt that the climbing didn't really take you anywhere or there was nothing to do when you got to the top.
- Photo 27 + 28: Students were worried about loose parts as people struggle to share or things get misplaced.
- Lacking variety and visual interest
- Lacking challenge

STAFF + STUDENT INTERVIEWS: Likes and Dislikes/Want Improved

Gr 5 students interviewed 2nd & 3rd grade students and several staff members. Here are some of the top responses collected.





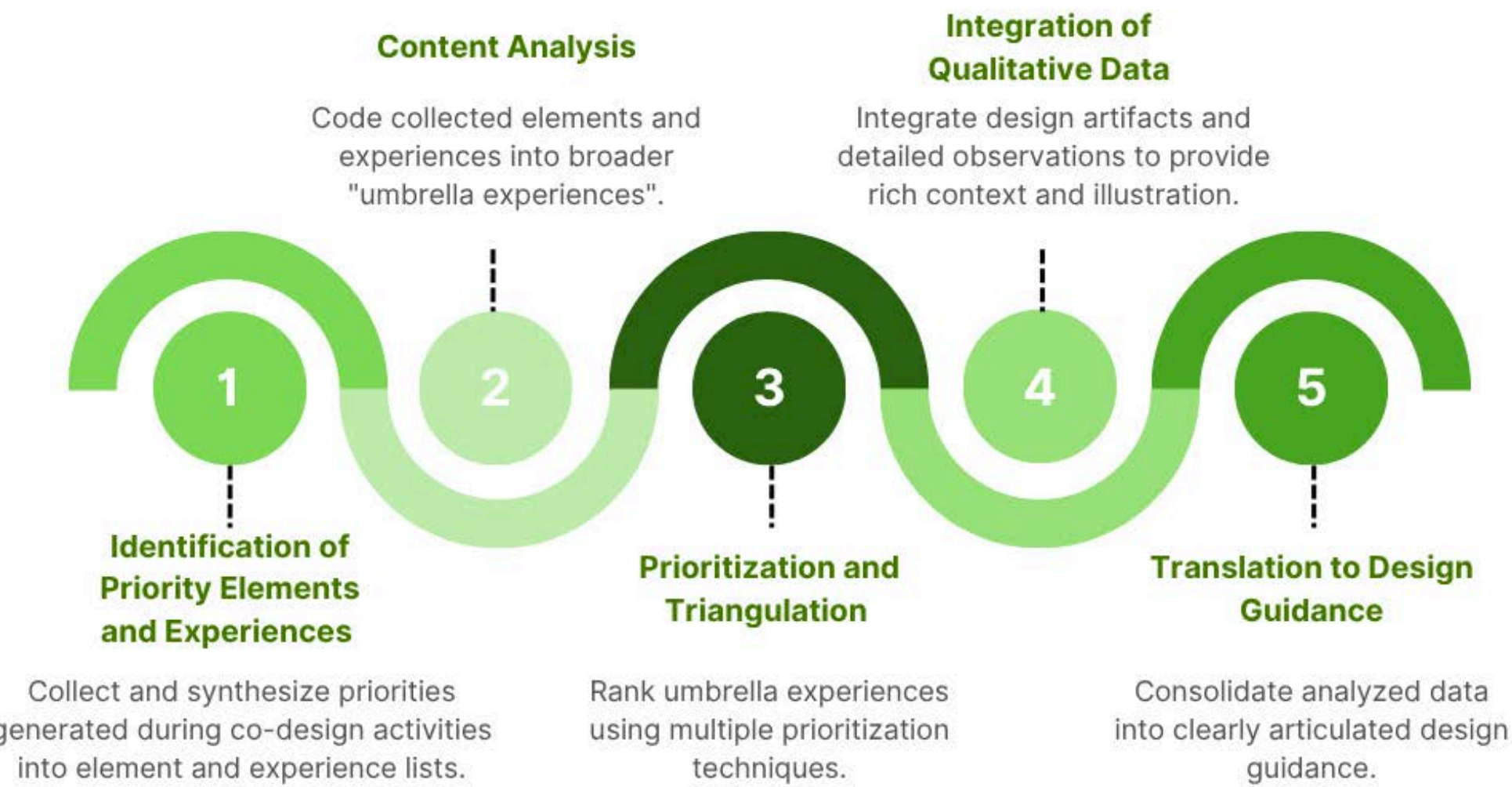
Design Development & Priority Synthesis Activities



IDENTIFYING PRIORITIES

Steps for Priority Analysis:

Priority Experiences of Participants (PrEP) Framework



**SCAN CODE TO DOWNLOAD
PREPRINT OF ARTICLE**

Joyce, K. & Loebach, J. (forthcoming Nov 2025). **Co-designing outdoor playspaces with children: A framework for analyzing participant design priorities.** *Design Studies*.

Steps for Priority Analysis



1 IDENTIFY PRIORITY ELEMENTS & EXPERIENCES

Compiling all elements and experiences generated across synthesis exercises will allow you to generate a master priorities list with counts associated with each individual element and experience.



2 IDENTIFY UMBRELLA EXPERIENCES

Look for higher-level categories (“umbrella experiences”) under which the elements and experiences naturally group. Ideally these umbrella experience categories are iteratively identified and reformulated as you progress through your program, so that as new information emerges you are constantly refining your understanding of them.



3 PRIORITIZE UMBRELLA EXPERIENCES

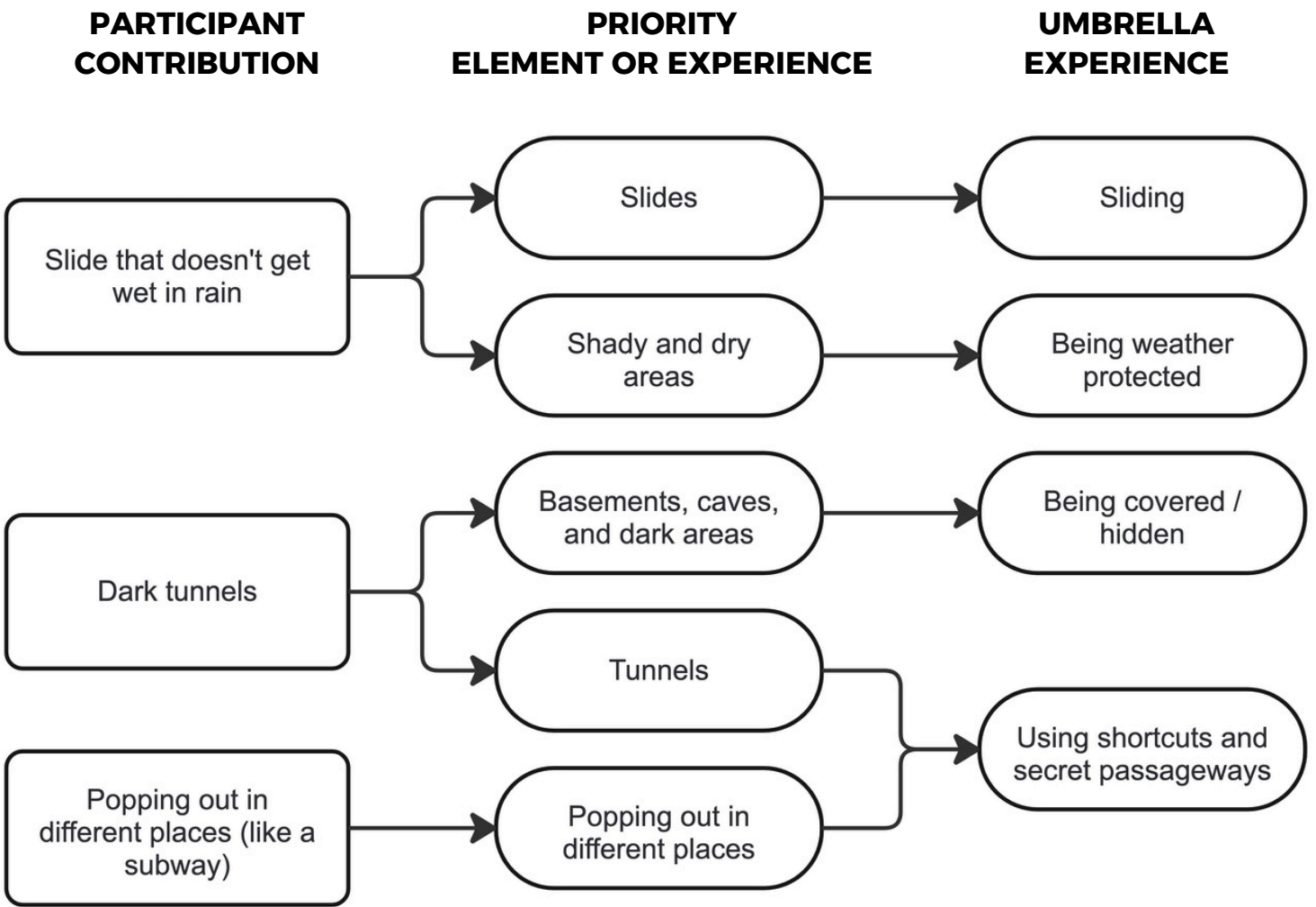
Consider multiple techniques for prioritizing umbrella experiences. Counting the number of times every element and experience appears in a synthesis (grouped under each umbrella experience) gives a total frequency count for each.

Full Priorities List

Although a full priorities list is only reviewed with participants in the 10-session program, development of this list is used in all programs to **identify and prioritize umbrella experiences**.

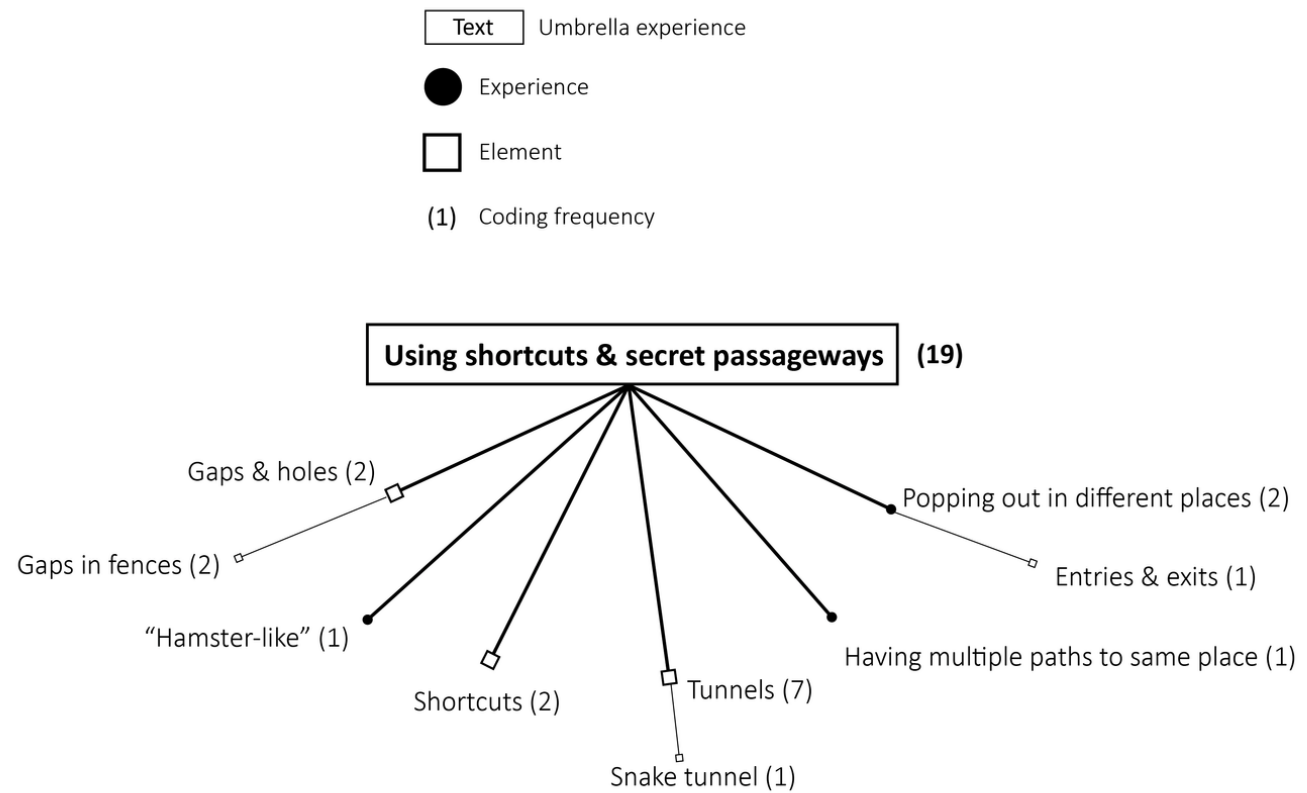
Identifying Umbrella Experiences (Left)

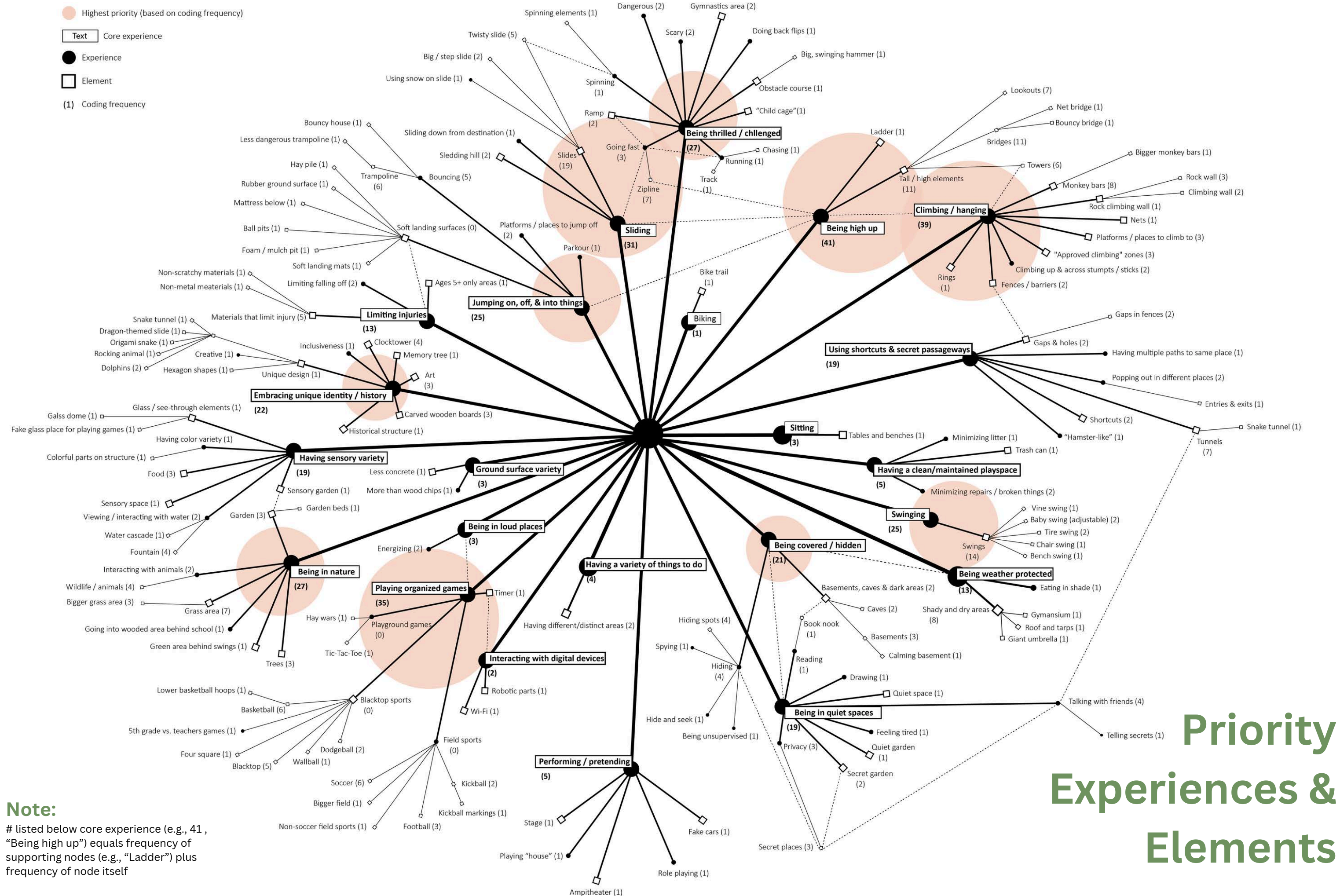
Document participant contributions during synthesis exercises, extract the elements/experiences from these contributions, then group all elements/experiences into umbrella experience categories.



Umbrella Experience Example (Right)

A full priorities list (or diagram) includes all umbrella experiences and their grouped elements/experiences. Below is one of 23 umbrella experiences from our case study. Each element/experience has a frequency count associated with it based on how many times it was raised during synthesis exercises. To calculate total frequency count for an umbrella experience (e.g. 19 below), sum all counts in the category.



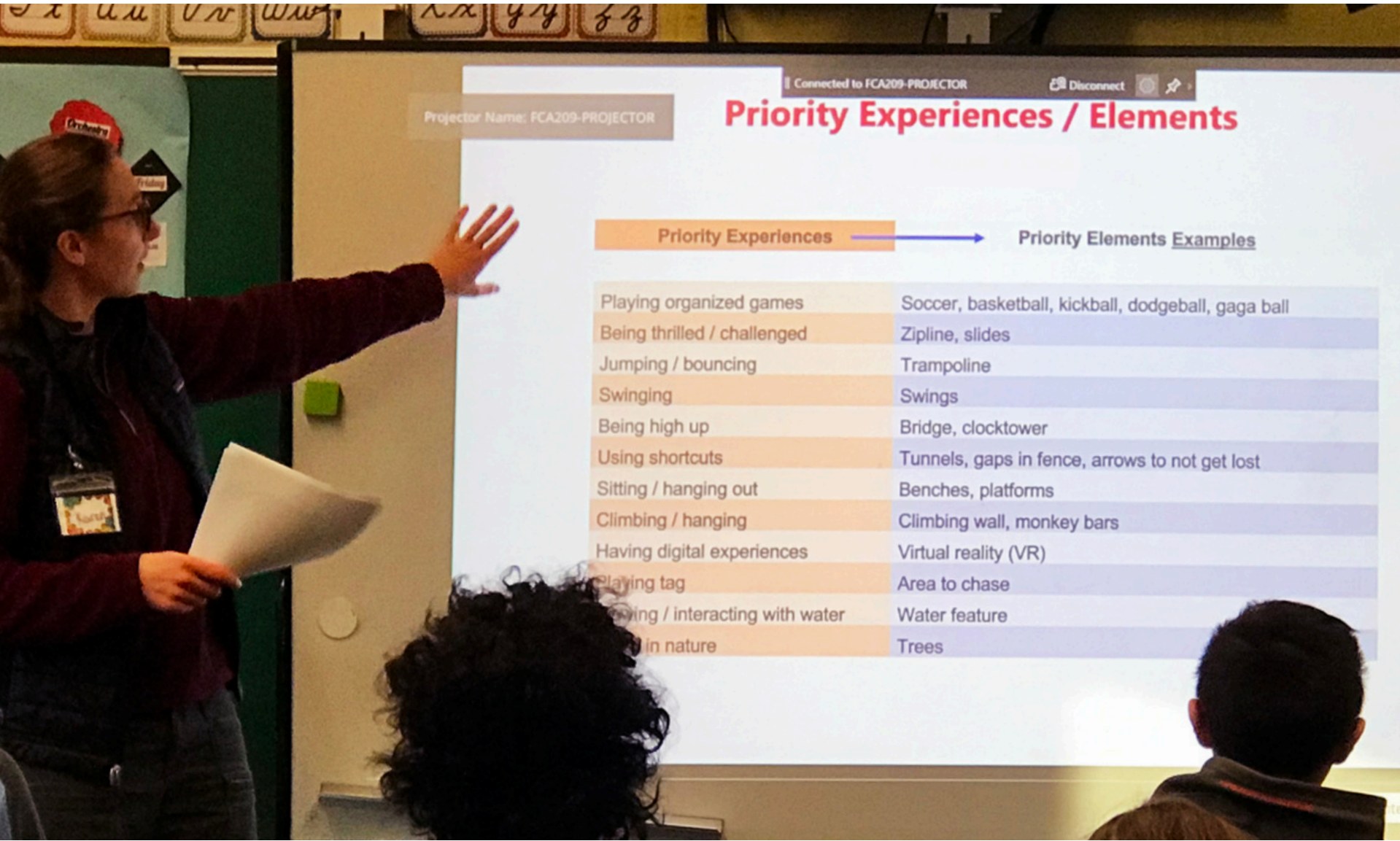


Note:
listed below core experience (e.g., 41, "Being high up") equals frequency of supporting nodes (e.g., "Ladder") plus frequency of node itself

**Priority
Experiences &
Elements**

Condensed Priorities List

Prepare and share a condensed list of priorities to remind participants of the umbrella experiences that have emerged helping to inform their designs.



Priority Summary (Left)
Facilitator reviews condensed priorities list with participants (umbrella experiences in left column, and example elements in right column).

From the full list, take the 10-15 umbrella experiences with the highest frequency counts.

Then choose 1-5 elements or experiences (all of which came directly from participants) within these umbrella experience categories to help exemplify the umbrella experience and how it can be supported. For example, “ziplines” and “slides” were chosen as elements that support “being thrilled / challenged.”

Identifying Individual Priorities & Personas via Q-Sort

Using the priority experience categories that emerged from co-design activities, we asked students (Class 1 only) and Tetra Tech designers to individually sort a set of 28 experience statements in terms of their relative importance to them. Experience statements used are on page 48; analyses follow on pages 49 to 55.

Activity Overview

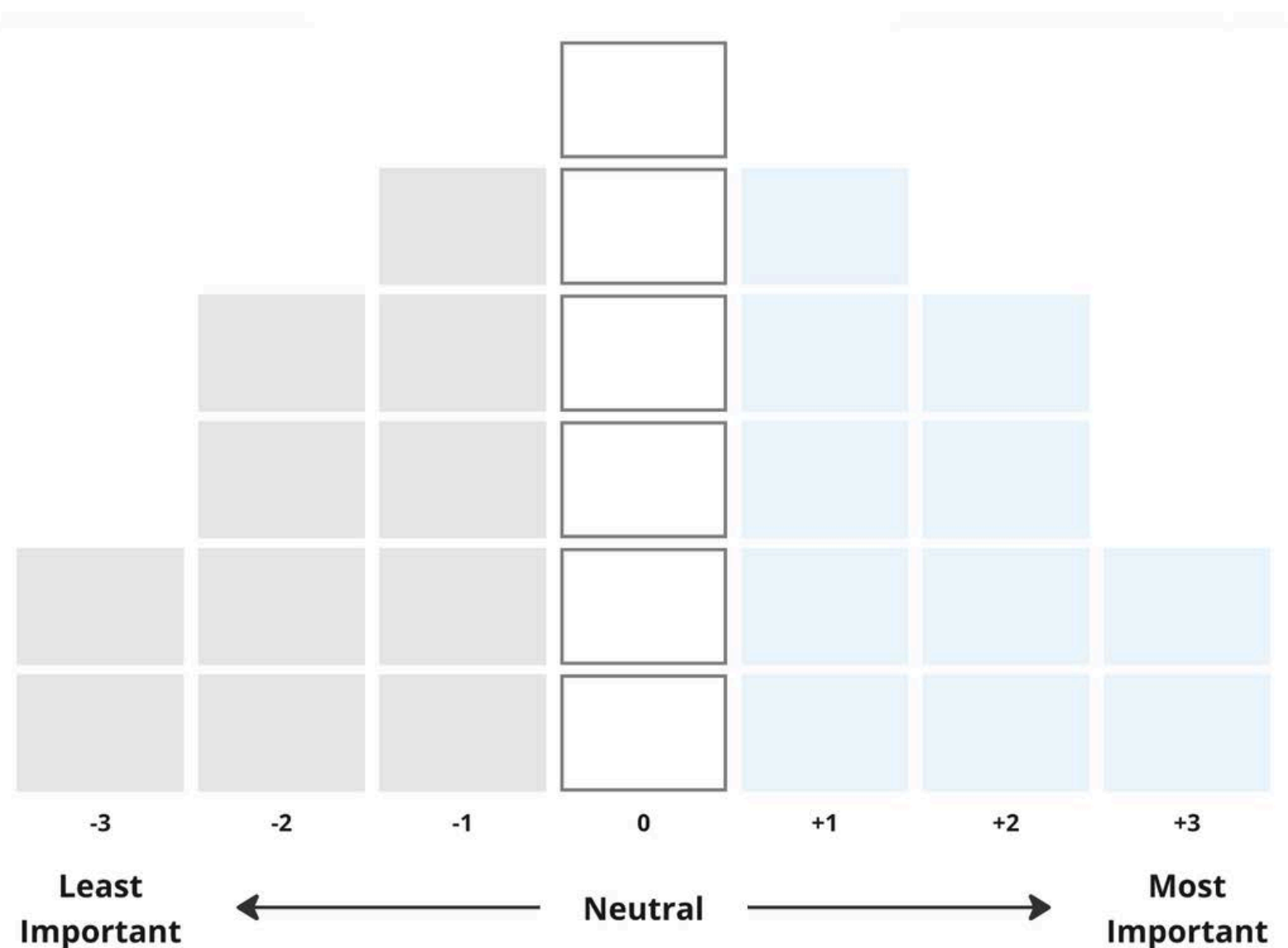
Students and designers were given the following Q-Sort grid and a list of 28 identified experience statements (e.g. “Having shortcuts or secret passageways”).

They were instructed to select their **top 11 experiences**, and **organize them into the chart from +1 to +3**, with +3 being the highest priority.

The remaining experiences were then sorted into the neutral and less important columns continuing in order of perceived importance.

Response Analysis

From this data, we calculated a mean score across all statements for both students and designers and conducted a factor analysis to identify distinct player and designer personas. These personas can help us understand the nuances between different viewpoints and the distinct needs of different user types.



Identifying Individual Priorities & Personas via Q-Sort

Below is the list of the 28 Experiences statements that individual students and designers were asked to prioritize within the QSort grid (see previous page).

- being high up or having lookouts
- having LOTS of different things to do
- having opportunities to use digital devices
- having opportunities to swing
- Seeing or interacting with water
- having space to play games on a hard surface (eg. basketball, dodgeball)
- having space to play games on a soft surface (eg. soccer, football)
- having opportunities to hide or hang out in small, enclosed spaces
- Seeing or interacting with animals (eg. birds, dogs)
- having shade from the sun
- having lots of sensory variety (eg. things to smell, touch, taste; colors)
- being in a unique or iconic playspace
- having wind/rain protection
- having a quiet space to rest or hang out
- being thrilled or challenged
- having opportunities to perform or pretend
- being able to play safely and limit possible injuries
- having opportunities to sit alone
- having opportunities to slide (eg. slides, sledding hill)
- having opportunities to interaction with digital elements
- having opportunities to jump on, off or into things
- having opportunities to sit with friends
- having opportunities to climb or hang (eg. monkey bars)
- seeing or interacting with plants (eg. trees, grass, flowers)
- having a clean, well-maintained playspace
- Being in a garden
- Having shortcuts or secret passageways
- having quiet spaces to read or draw

Identifying Priorities Exercise

In small groups, combine and then organize your post-its to understand both majority and minority umbrella priorities for

Play Experiences

Add umbrella priorities on your team worksheet - 1 per box.

Generally organize them in order of most frequently to least frequently mentioned (as possible)

Identifying Priorities Exercise

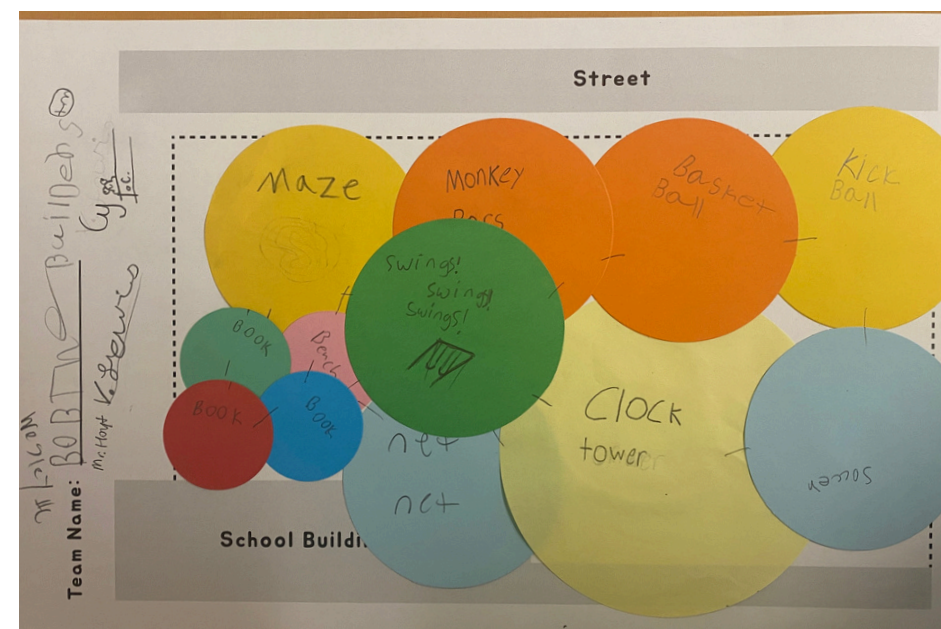
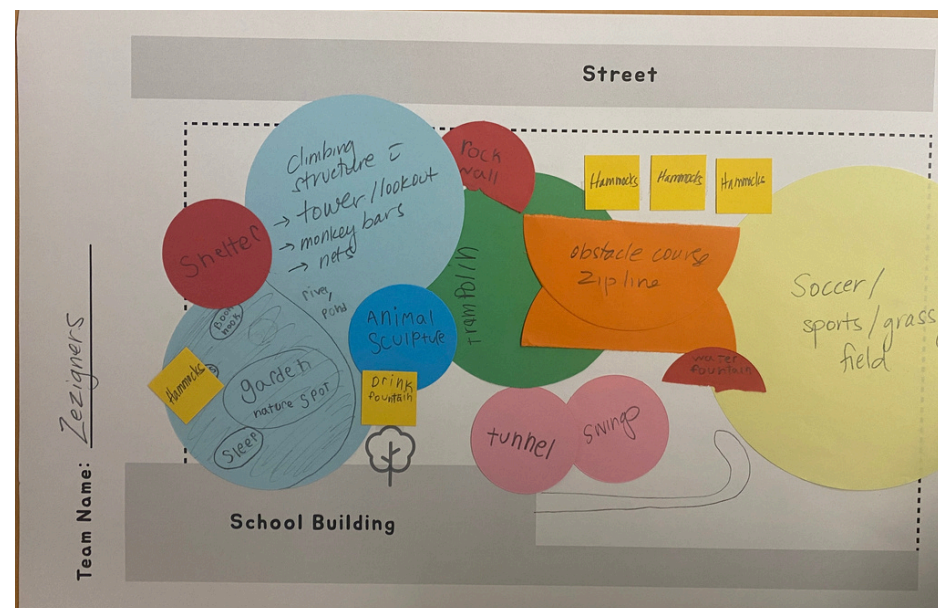
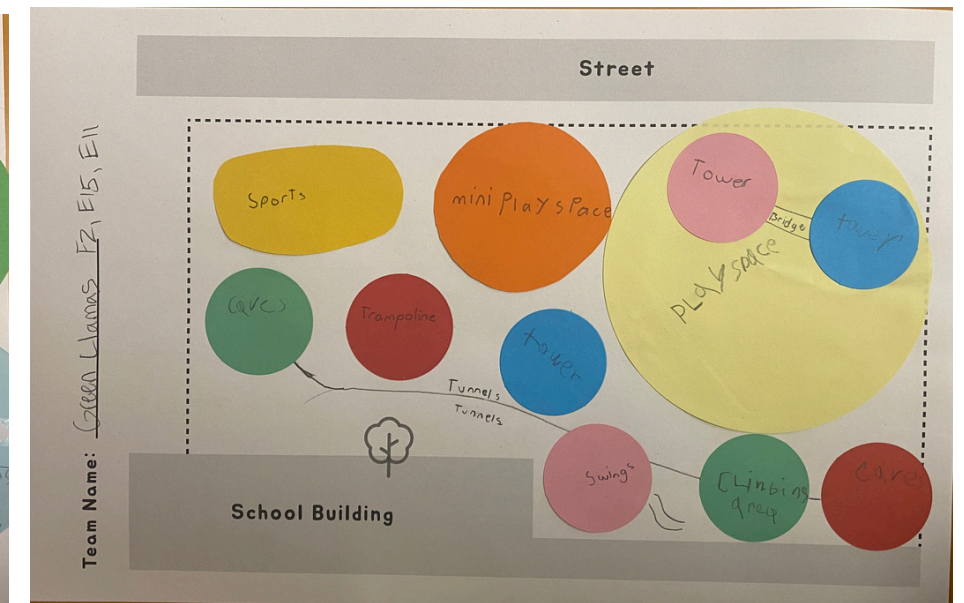
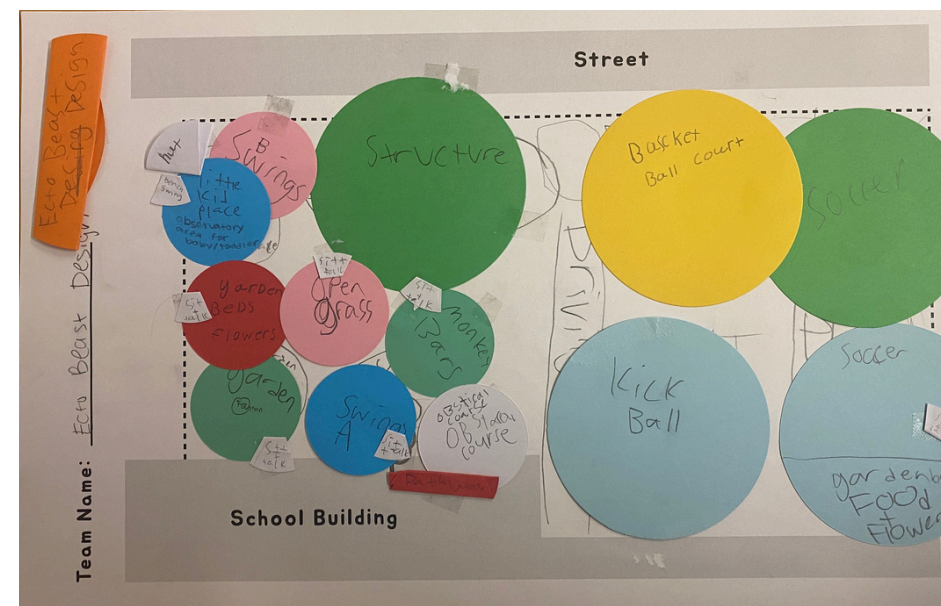
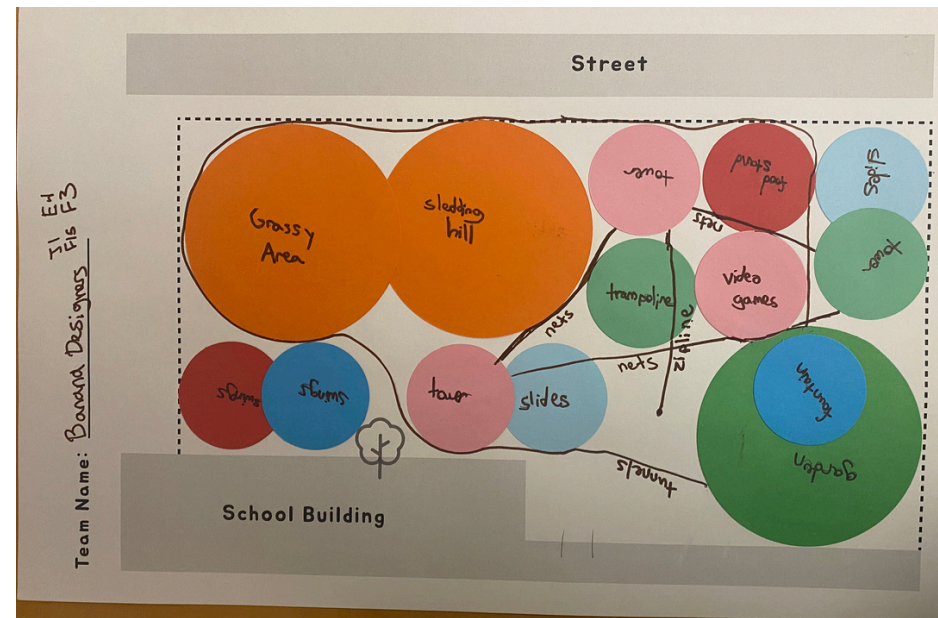
Considering your umbrella experiences...

- What might you now include in the playground design given these insights? Brainstorm some design elements that could honor the priority experience and write them in the box below
- **Discuss:**
 - how well / easily you integrated majority and minority views?
 - how much room was left for design creativity & flexibility?
 - how do these elements / experiences compare to your own priority elements and experiences?



DESIGN DEVELOPMENT

Bubble Diagrams



Once students were grouped into design teams they began their design process by creating bubble diagrams to represent the spatial layout & adjacencies of the key play experiences and elements they wanted to include in their final plans.

Class 1: Banana Designers

Top 5 Priority Elements

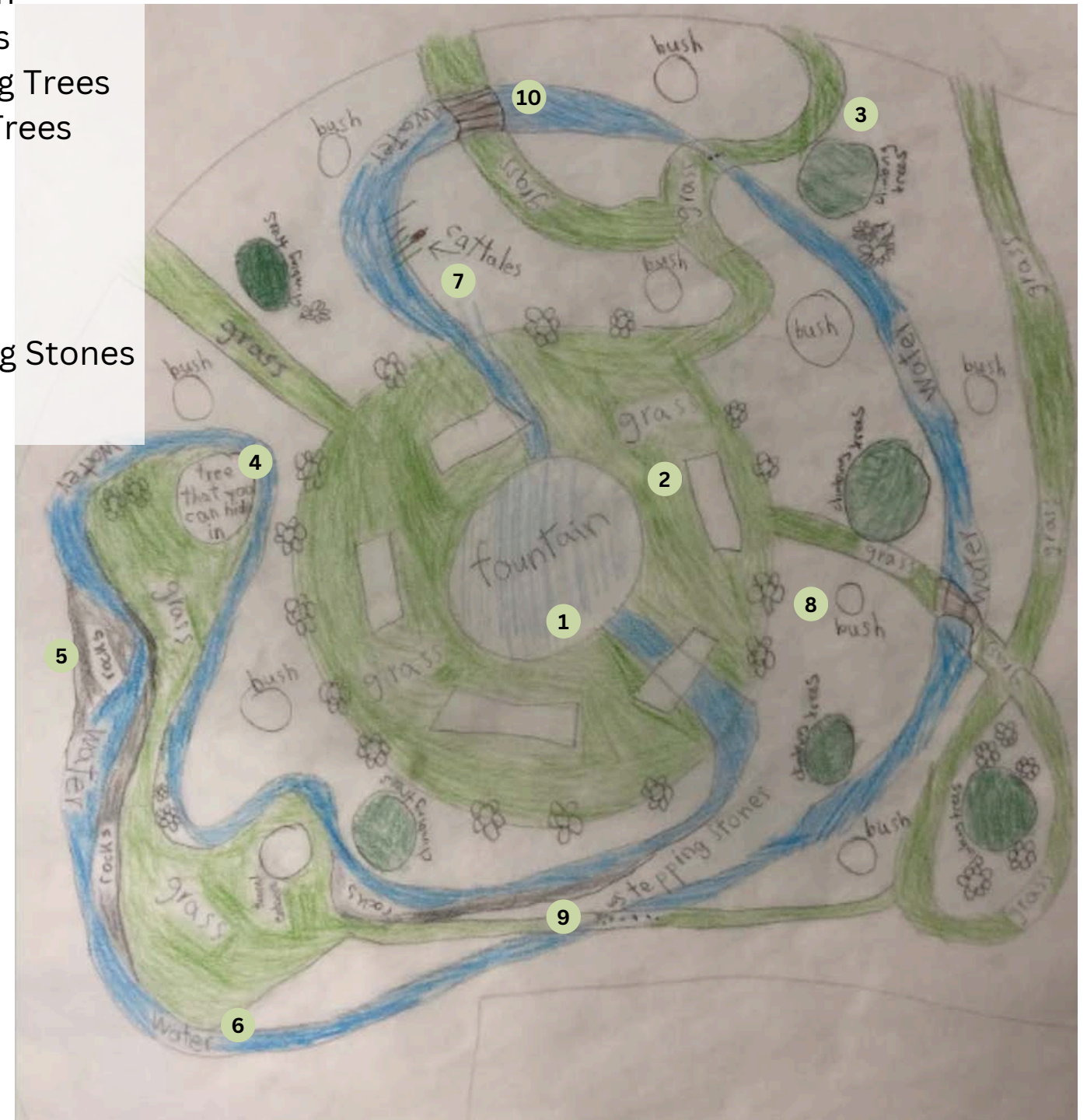
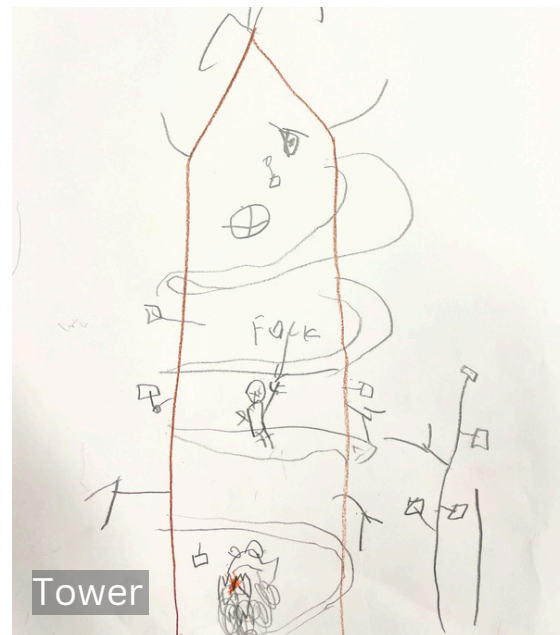
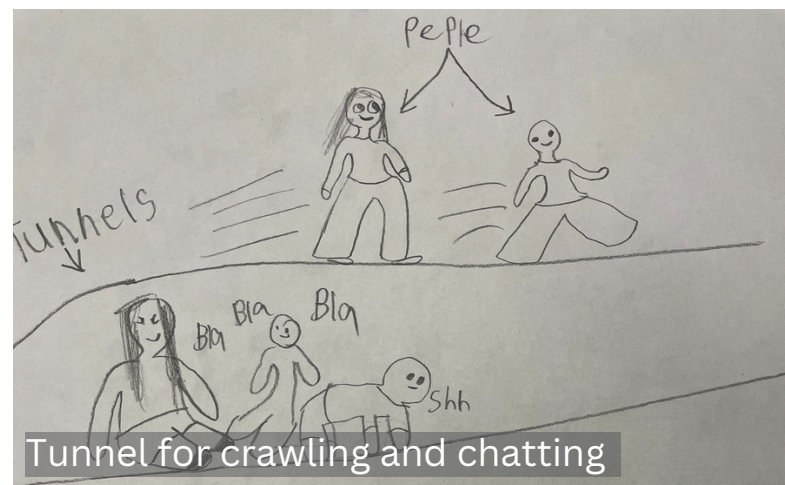
1. Towers
2. Ziplines/Slides
3. Tunnels
4. Garden
5. Hiding Spots

Top 5 Priority Experiences

1. Being up high
2. Being thrilled/challenged
3. Using shortcuts
4. Being in nature
5. Being covered

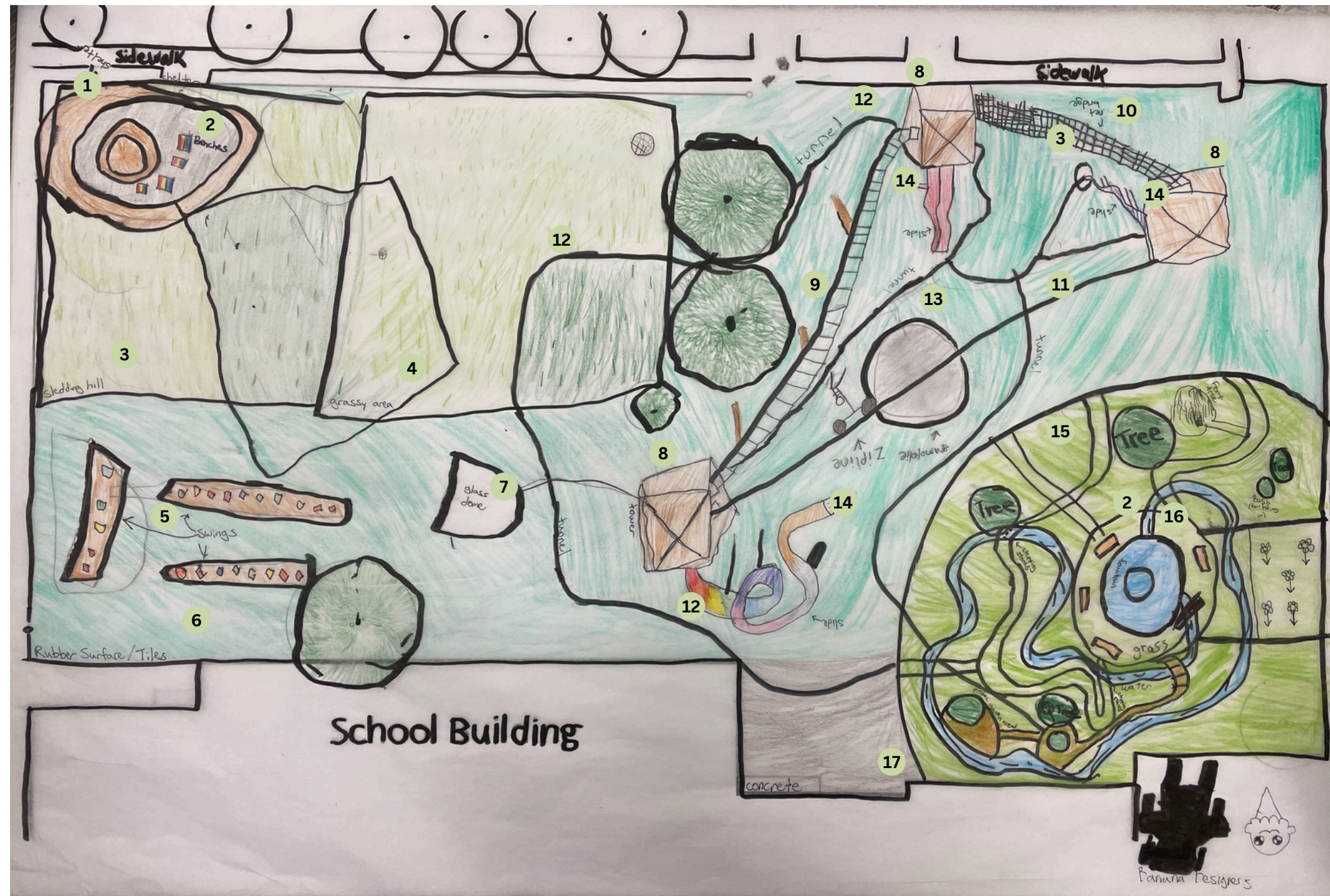
Key to Drawing

1. Fountain
2. Benches
3. Climbing Trees
4. Hiding Trees
5. Rocks
6. Water
7. Cattails
8. Bushes
9. Stepping Stones
10. Bridges



Design Vision

“Our playground has lots of tall towers that look like a city. It also includes lots of flowers, trees, and bushes. You can hide in them and it also allows for quiet spaces. Some materials include meeting, tiers, logs, grass, and stepping stones. We don’t want mulch, metal or plastic if it's not recycled.”



Unique Features

1. A fountain in the garden covered in mosaic
2. Tunnels that connect to structures in the playground

Final Site Plan

1. Shelter
2. Benches
3. Sledding Hill
4. Grassy Area
5. Swings
6. Rubber/Surface Tile
7. Glass Dome
8. Tower
9. Bridge
10. Net
11. Zipline
12. Tunnels
13. Trampoline
14. Slides
15. Garden
16. Fountain
17. Concrete

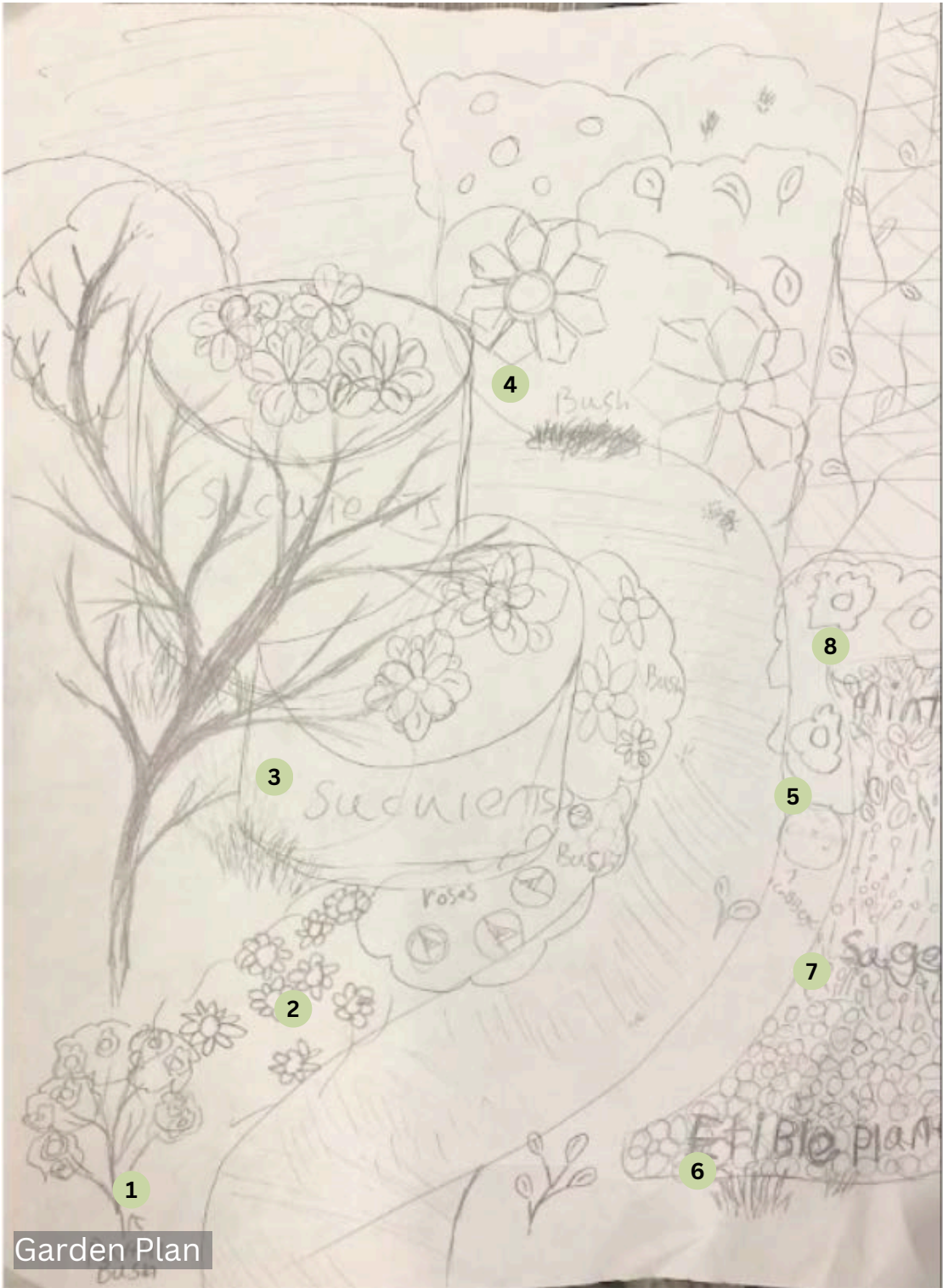
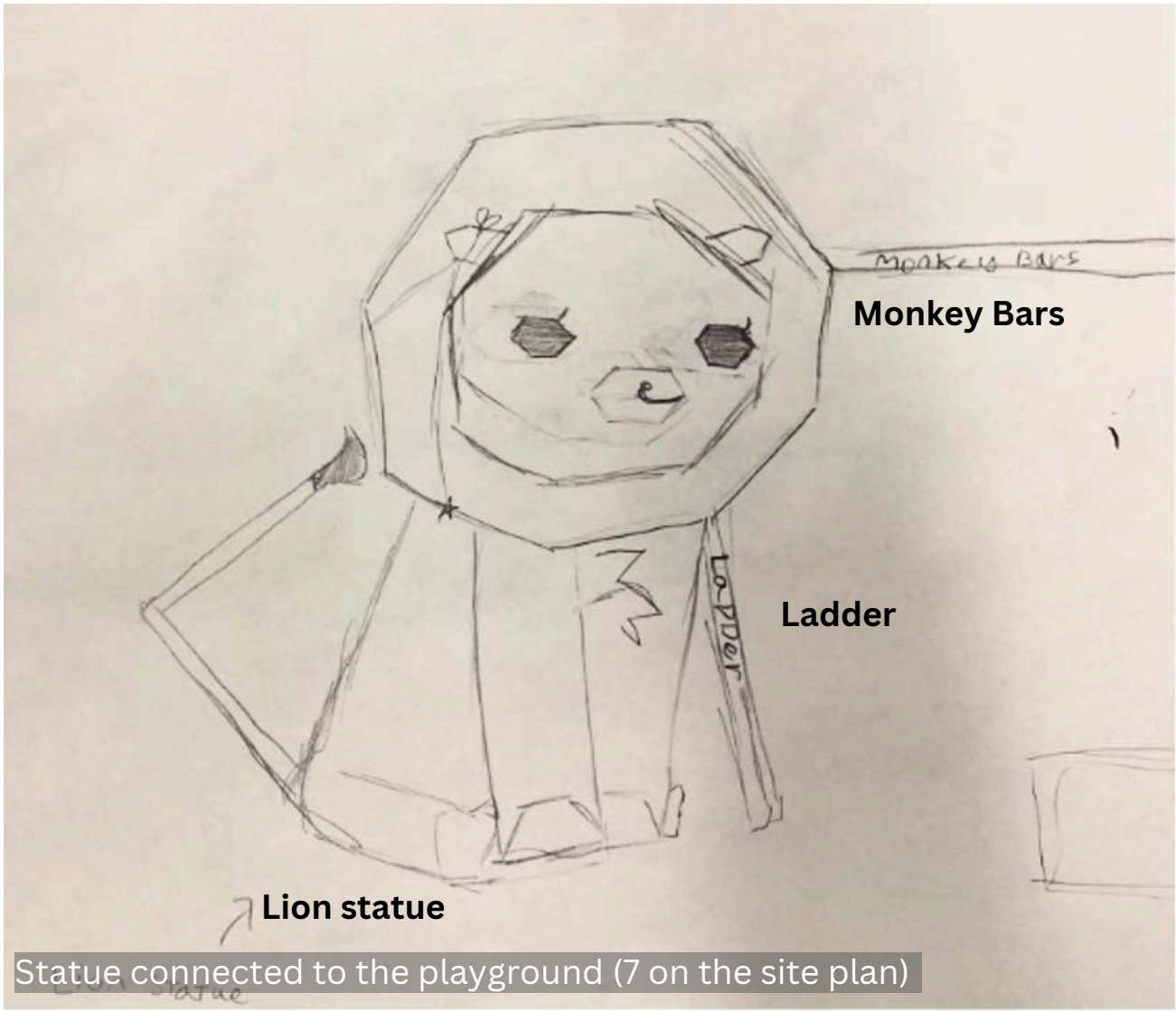
Class 1: Bob the Builders

Top 5 Priority Elements

- 1. Kickball Field
- 2. Swings
- 3. Tunnels
- 4. Clocktower
- 5. Plaque

Top 5 Priority Experiences

- 1. Jumping
- 2. Going Fast
- 3. Hanging Out
- 4. Climbing
- 5. Going Underneath Stuff



Garden Detail

- 1. Puff Ball Bush
- 2. Roses
- 3. Succulents
- 4. Bush
- 5. Cabbage
- 6. Edible Plants
- 7. Sage
- 8. Mint

Design Vision

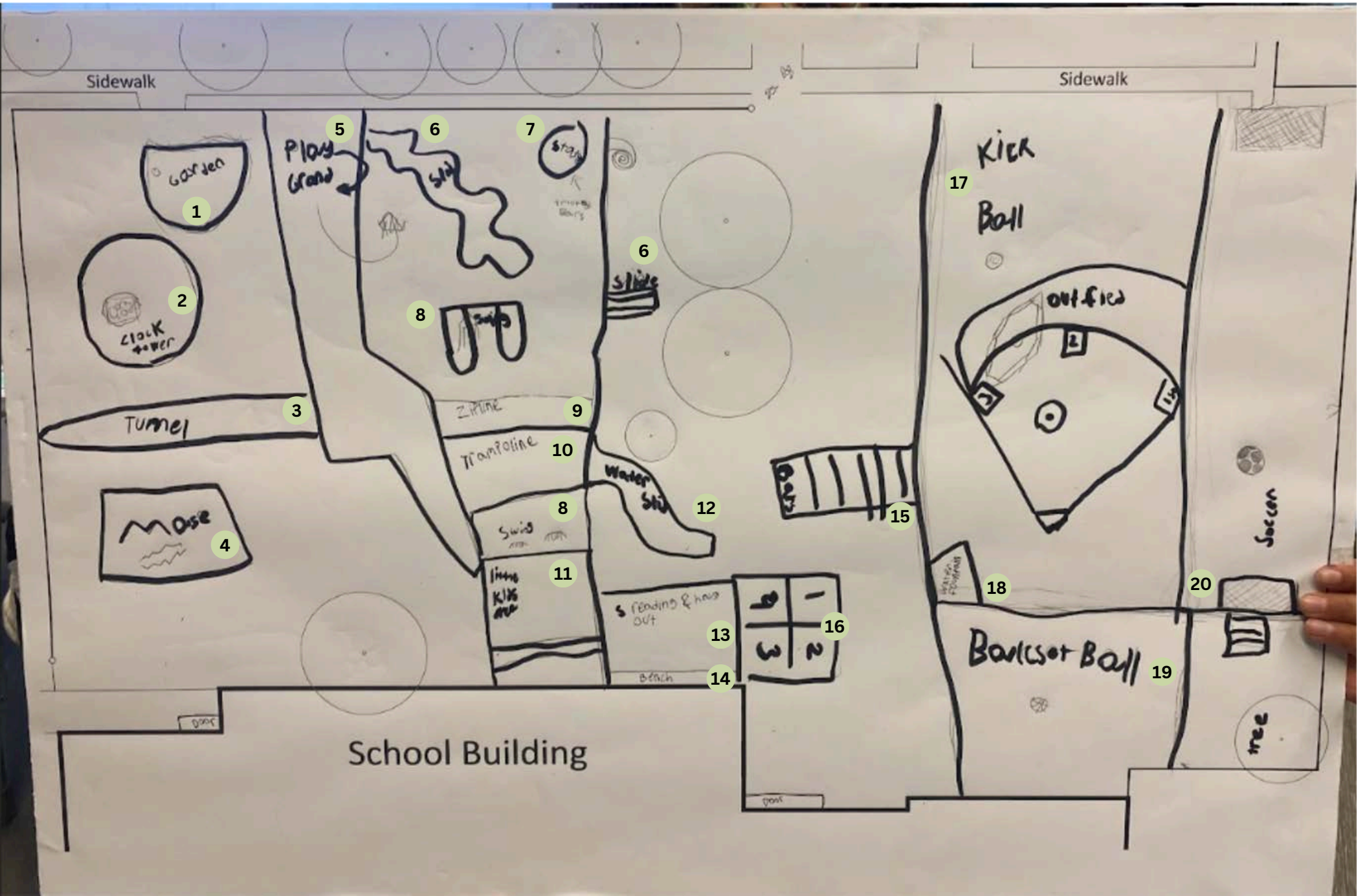
“We want a fun and safe place so no one will get severely hurt but people will still take risks.
We also want it to be a playground with lots and lots of space.”

Unique Features

- 1. Kickball Field
- 2. Tunnels

Final Site Plan

- 1. Garden
- 2. Clock Tower
- 3. Tunnel
- 4. Maze
- 5. Playground
- 6. Slide
- 7. Statue
- 8. Swings
- 9. Zipline
- 10. Trampoline
- 11. Little Kids Area
- 12. Water Slide
- 13. Reading and Hanging Out
- 14. Bench
- 15. Monkey Bars
- 16. Four Square
- 17. Kickball
- 18. Water Fountain
- 19. Basketball
- 20. Soccer



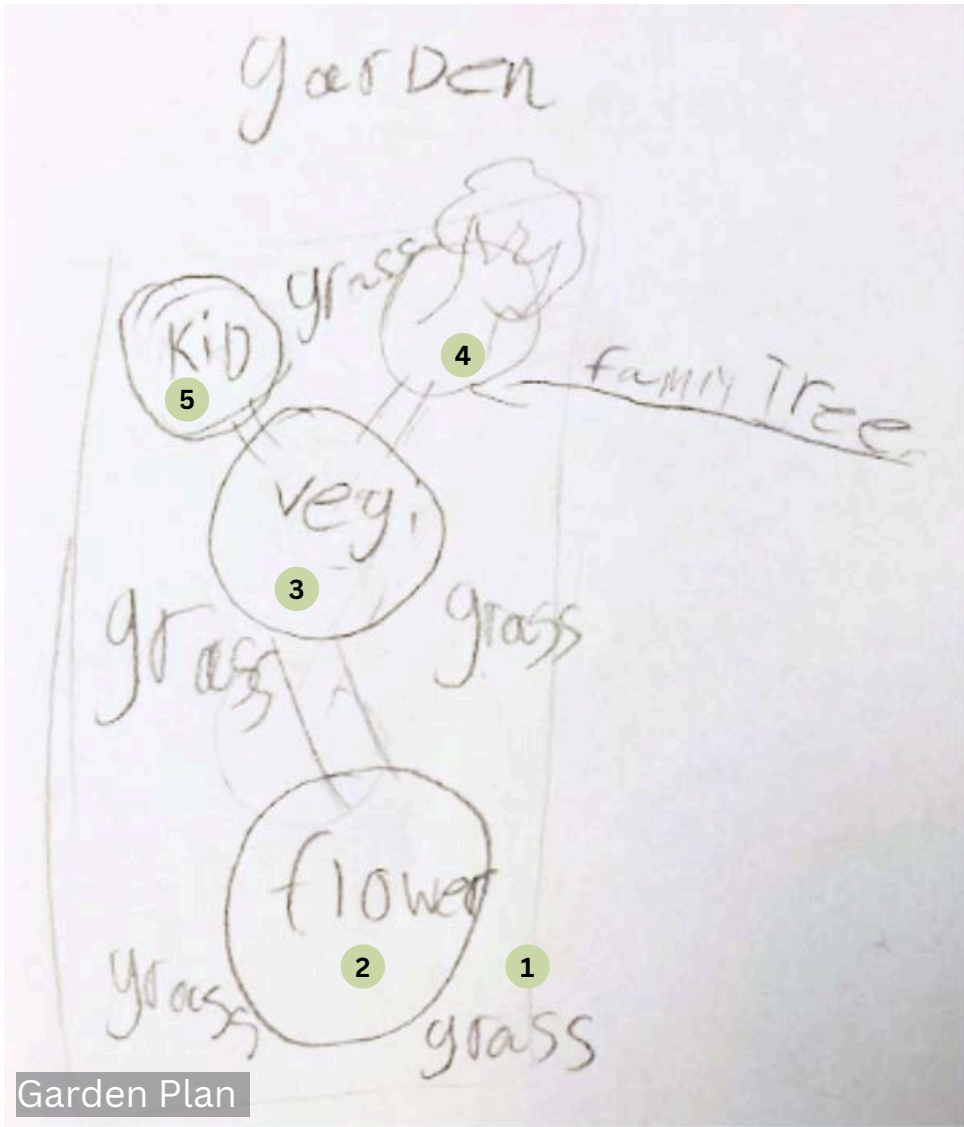
Class 1: Ecto Beast Design

Top 5 Priority Elements

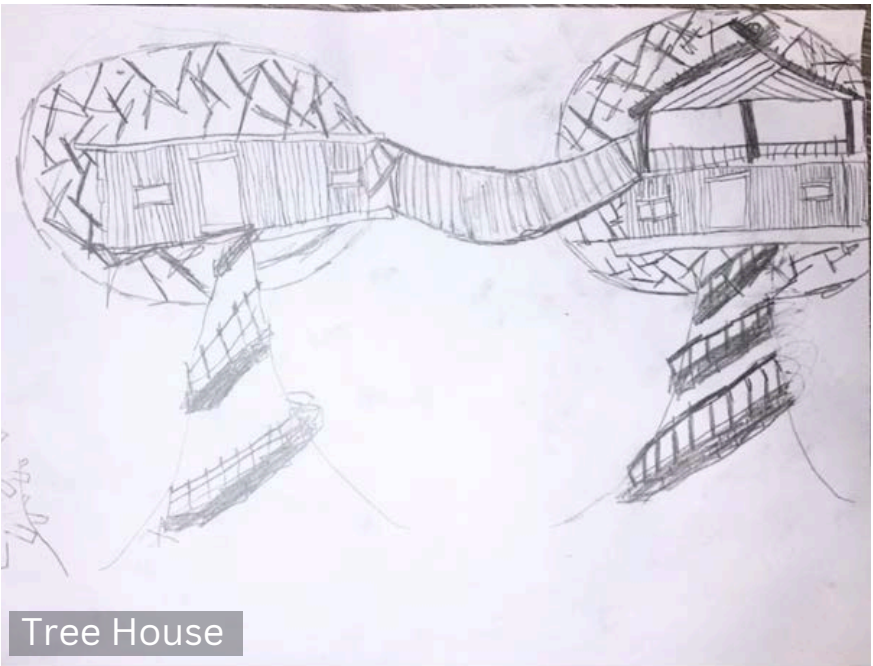
- 1. Garden
- 2. High Up Places
- 3. Gaps and Holes
- 4. Caves and Hiding Spots
- 5. Trees, Grass, Wildlife

Top 5 Priority Experiences

- 1. Being covered/hidden
- 2. Being in quiet spaces
- 3. Being in nature
- 4. Being thrilled/challenged
- 5. Having Sensory Variety



Garden Plan



Tree House

- 1. Grass
- 2. Flowers
- 3. Vegetable Garden
- 4. Family Tree (Statue representation with everyone's names on it)
- 5. Kid Garden



Cat and Dog Statue

Design Vision

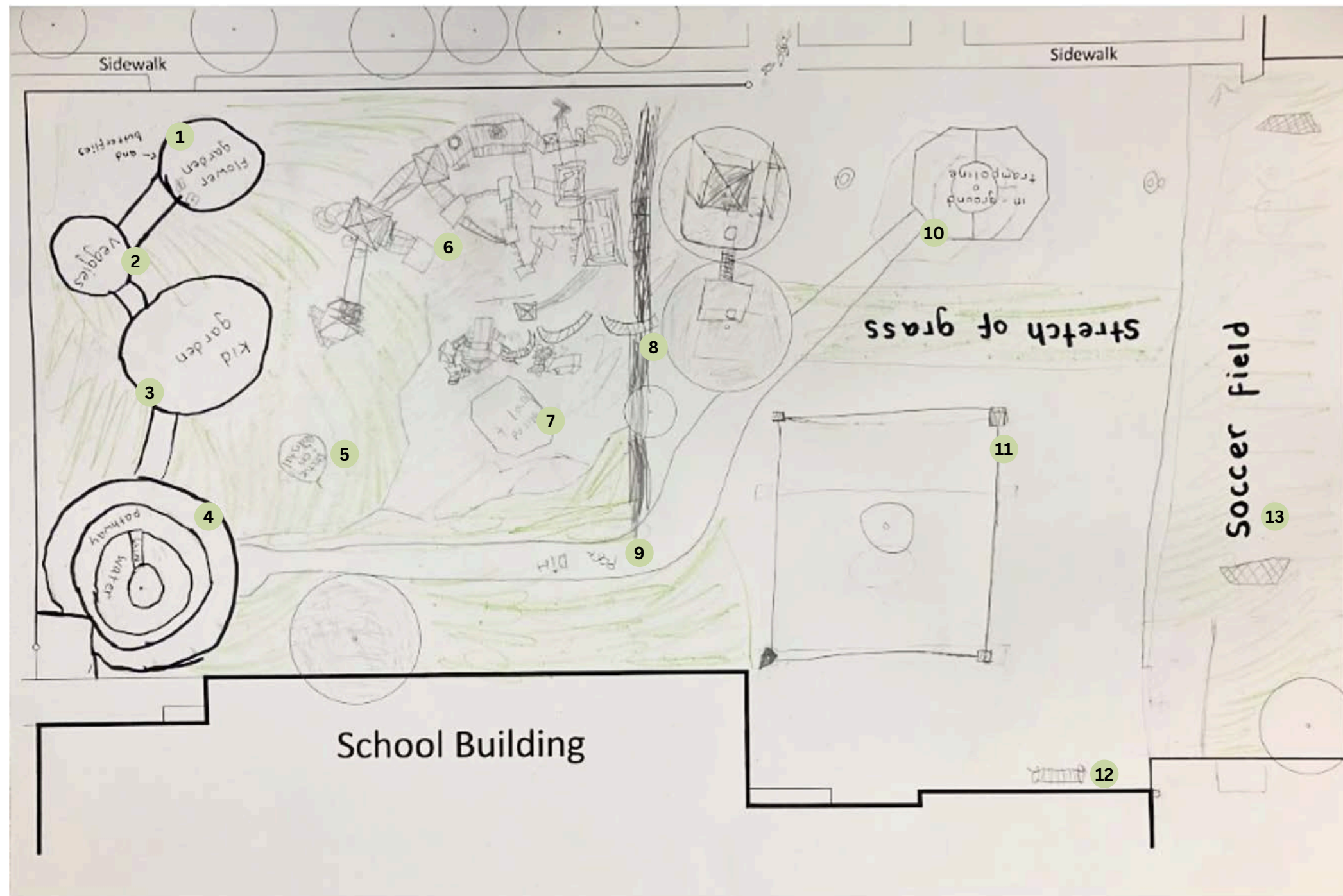
“We want our playground to have a lot of calm spaces and active spaces. We would love to have a sensory garden that is active. We want our playground to have a lot of balance of different things.”

Unique Features

1. Tree structures
2. Sprawling structure that reaches across the playground

Final Site Plan

1. Flower Garden
2. Vegetable Garden
3. Kid Garden
4. Water and Pathways Garden
- 5....
6. Playground Structure
- 7....
8. Bridge over a river?
9. Dirt Path
10. Ground Trampoline
11. Kickball Field
12. Bench
13. Soccer Field



Class 2: Design Group 2

Top 5 Priority Elements

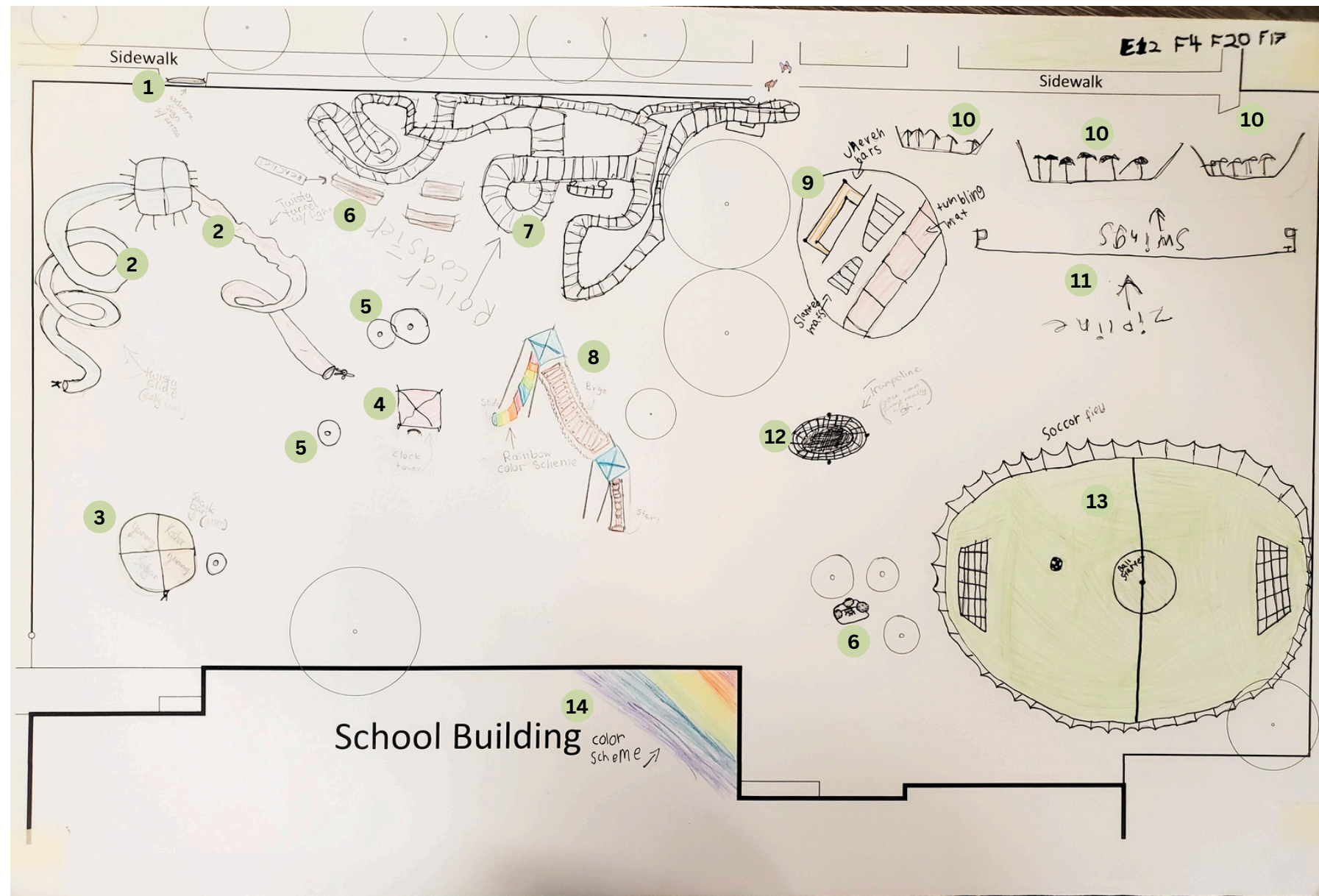
1. Gymnastics Area
2. Rollercoaster
3. Bridge
4. Soccer Field
5. Snack Area

Top 5 Priority Experiences

1. Being thrilled / challenged
2. Jumping / bouncing
3. Swinging
4. Using shortcuts
5. Climbing / hanging

Unique Features

1. Giant gymnastics court with lessons during the school day
2. Rollercoaster
3. Rainbow color scheme



Final Site Plan

1. Welcome Sign
2. Tower w 2 twisty slides
3. Snack Bar
4. Clock Tower
5. Trees
6. Benches
7. Rollercoaster
8. Tower structure with stairs, slide and bridge between
9. Gymnastics court with uneven bars, wedge mats, and tumbling mat
10. Swing structures
11. Zipline
12. Trampoline
13. Soccer Field
14. Color Scheme

Design Vision

“We want a place with no electronics and an awesome and fun playground.”

Class 2: Design Group 4

Top 5 Priority Elements

1. Play Structure
2. Sports Fields
3. Garden
4. Sitting Area
5. Stage

Top 5 Priority Experiences

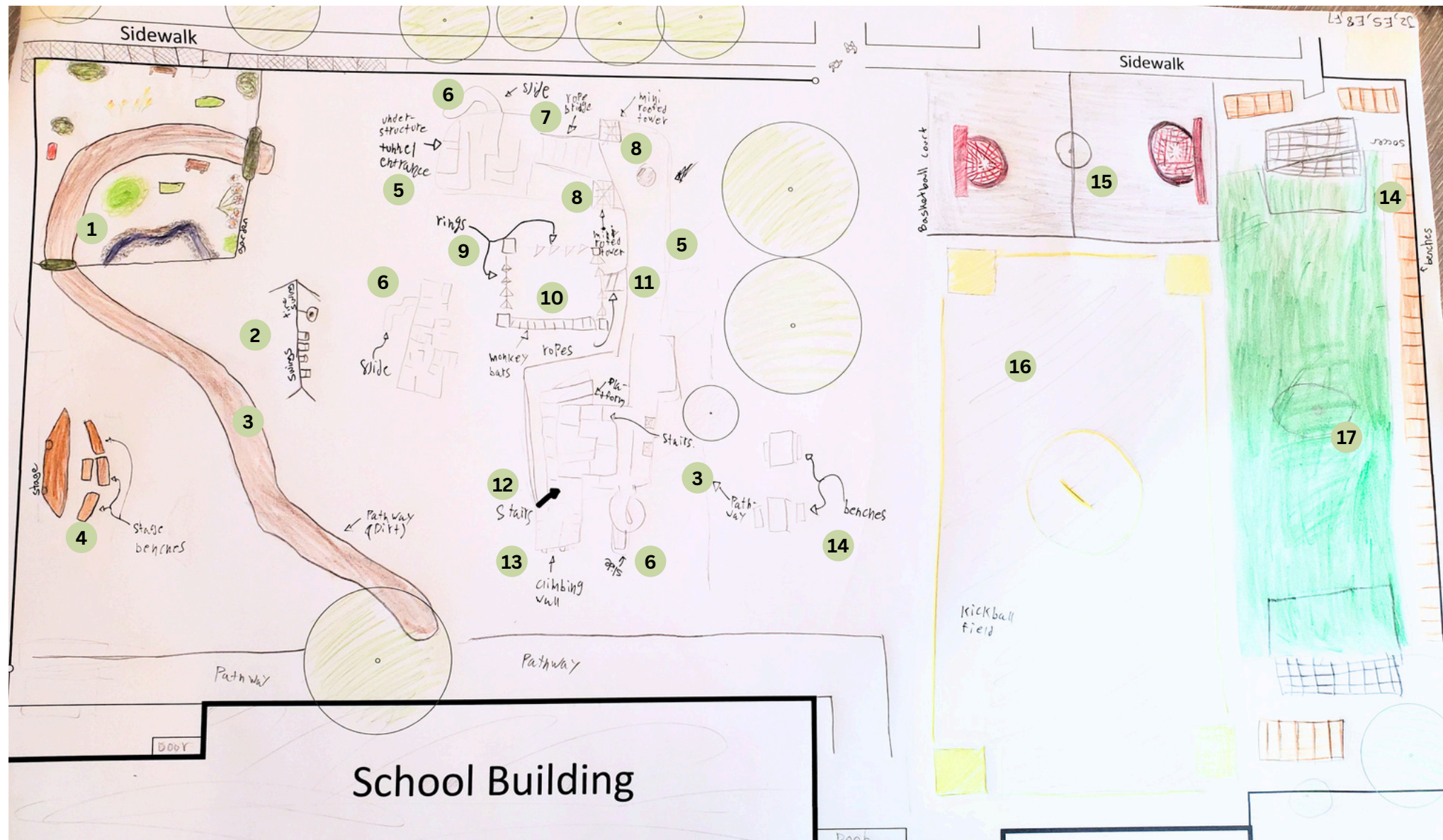
1. Climbing / hanging
2. Running
3. Playing organized games
4. Resting
5. Performing

Unique Features

1. Garden
2. Tunnel (system under play structure)

Final Site Plan

1. Large Garden w benches and pathway
2. Swing Structure w Tire Swing
3. Pathway b/w Garden and Large Tree
4. Performance Stage w Seating
5. Large Play Structure w Tunnel Underneath
6. Slides
7. Rope Bridge
8. Mini Roofed Towers
9. (Gymnastic) Rings
10. Monkey Bars
11. Ropes
12. Stairs
13. Climbing Wall
14. Benches
15. Basketball Court
16. Kickball Field
17. Soccer Field w Benches



Design Vision

“Our playspace will have lots of options for everyone to do whatever they want”

Notable Student Quotes

“There are a lot of kids that like soccer, basketball, kickball, so we wanted to include that.”

“The bridge is basically our favorite. You can see everything from there. We do want a bridge of some kind.”

“We need more trees...just an area full of shade and trees”
“More bushes, trees,...stuff to hide behind”

“I especially like climbing on anything I’m not allowed to climb on. I really want a rock wall or something like that.”

“Why does it always have to be metal?”
“Personally not a big fan of metal slides because [you] can get shocked by them”

“We cannot get rid of that tree. That tree is my childhood tree” (Referring to the tree nearest to the school building)



Identify & Prioritize Umbrella Experiences

Leverage at least one, and ideally multiple, prioritization techniques to rank umbrella experiences gaining confidence in which are most important to participants.

Top Priorities Table: Highest priority umbrella experiences in our case study triangulated across three prioritization techniques.

Umbrella Experience	Rank		
	Frequency Count	Q-Sort Mean Score	Team “Top 5 Experience”
Being high up or having lookouts	1	2	2
Climbing/ dangling	2	3	4
Playing organized games	3	9	4
Sliding	4	7	4
Being in nature	5	15	3
Being thrilled/challenged	5	6	1
Swinging	6	12	4
Jumping on, off and into things	6	5	4
Embracing unique identity/ history	7	11	
Being covered/ hidden	8	4	1
Having sensory variety	9	16	3
Using shortcuts and secret passageways	9	1	4
Being in quiet spaces	9	13	3

**Note:* Bolding indicates top ranked umbrella experiences by prioritization technique



Look for Player Personas

Recognize that children don't all want to play the same things or in the same way... or play the same way every day.

Look at your data* for distinct **Player Personas** to understand the different types of play preferences you are designing for

**If you created used QSort or a similar process to identify most/least valued play experiences, conduct Factor Analysis to identify distinct player personas*

Player Persona 1 – “Journey Seeker”



Ideal Playspace:
existing wooden play
structure

This player persona is distinguished by an emphasis on having both places of **prospect** (e.g. being high up / climbing, able to look out over) and having **refuge** (e.g. hiding in small space, being in a quiet space). They have broad-ranging requirements for their playspace, **desiring both physical challenges and calming spaces**.

This persona also emphasizes having a **unique or iconic playspace** more than the other player personas, and places less emphasis on having spaces to play organized games like soccer and basketball.

DISTINGUISHING PRIORITIES

These priorities **distinguish this persona from the other two player personas**

TOP PRIORITIES

- Being high up or having lookouts
- Having shortcuts or secret passageways
- Having opportunities to hide or hang out in small, enclosed spaces
- Having opportunities to climb or hang
- Being thrilled or challenged
- Having opportunities to jump on, off, or into things

HIGHER than other personas

- Being high up or having lookouts
- Having opportunities to hide or hang out in small, enclosed spaces
- Having opportunities to climb or hang
- Being in a unique or iconic playspace
- Having a quiet space to rest or hang-out

LOWER than other personas

- Having opportunities to use digital devices
- Having space to play games on a hard surface
- Having space to play games on a soft surface
- Having a clean, well-maintained playspace

Player Persona 2 – “Manufactured Play & Sports Enthusiast”



Ideal Playspace:

high-tech sports field
complex

This player persona is distinguished by an emphasis on **manufactured** play features such as **sports fields, courts, play structures and digital features**. They are uniquely uninterested in nature-oriented experiences, such as being in a garden and interacting with plants. However, compared with the other player personas, they also have greater interest in being able to have **diverse sensory experiences** in their playspace.

DISTINGUISHING PRIORITIES

These priorities **distinguish this persona from the other two player personas**

TOP PRIORITIES

- Having space to play games on a hard surface
- Having space to play games on a soft surface
- Being thrilled or challenged
- Having opportunities to jump on, off, or into things
- Having shortcuts or secret passageways
- Having a clean, well-maintained playspace

HIGHER than other personas

- Having space to play games on a soft surface
- Having opportunities to use digital devices
- Having opportunities to interact with digital elements
- Having lots of sensory variety

LOWER than other personas

- Being high up or having lookouts
- Seeing or interacting with plants
- Being in a garden

Player Persona 3 – “Gentle Explorer”



Ideal Playspace:

quiet garden with observatory

TOP PRIORITIES

- Having shortcuts or secret passageways
- Being in a garden
- Being high up or having lookouts
- Having space to play games on a hard surface
- Having opportunities to swing
- Having a quiet space to read or draw

This player persona is distinguished by an emphasis on **more quiet, contemplative experiences** that can be done **on their own**. The persona also ranks **safety** significantly higher than the other two player personas, with more extreme, physically challenging activities ranked lower, such as jumping on, off, or into things.

This persona is often neglected in traditional playspace design, which tends to afford more opportunities for physical, social play, and fewer opportunities for quiet, introspective play.

DISTINGUISHING PRIORITIES

These priorities **distinguish this persona from the other two player personas**

HIGHER than other personas

- Being in a garden
- Having opportunities to swing
- Having a quiet space to read or draw
- Seeing or interacting with plants
- Being able to play safely and limit possible injuries

LOWER than other personas

- Having opportunities to jump on, off, or into things
- Having opportunities to sit with friends
- Having opportunities to hide or hang out in small, enclosed spaces
- Having LOTS of different things to do
- Being thrilled or challenged
- Having lots of sensory variety
- Being in a unique or iconic playspace
- Seeing or interacting with animals

Designer Persona 1 – “Natural Designer”



Ideal Playspace:
forest playground

This designer persona is distinguished by an emphasis on opportunities to interact with **plants and animals**, and gravitates towards **natural elements and spaces**. The designer persona prioritizes similar experiences to the “Journey Seeker” player persona. Compared with the other designer persona, they are less preoccupied with practicalities, such as safety and shade, and more interested in providing a **dynamic range of play experiences** including **both challenging experiences and quiet times**.

DISTINGUISHING PRIORITIES

These priorities **distinguish this persona from the other designer persona**

TOP PRIORITIES

- Seeing or interacting with plants
- Having space to play games on a soft surface
- Being high up or having lookouts
- Having a quiet space to rest or hang-out
- Having opportunities to jump on, off, or into things
- Being thrilled or challenged

HIGHER than other persona

- Seeing or interacting with plants
- Being high up or having lookouts
- Having a quiet space to rest or hang-out
- Having opportunities to jump on, off, or into things
- Having opportunities to hide or hang out in small, enclosed spaces
- Seeing or interacting with animals

LOWER than other persona

- Having opportunities to swing
- Having opportunities to perform or pretend
- Being able to play safely and limit possible injuries
- Having shade from the sun
- Having opportunities to sit alone
- Having opportunities to slide
- Having lots of sensory variety
- Being in a garden

Designer Persona 2 – “Cautious Designer”



Ideal Playspace:
conventional playground

This designer persona is distinguished by a **strong emphasis on safety & minimal risk**. Compared to the other designer persona, they emphasize a **more conventional set of playground experiences**, such as swinging and sliding.

DISTINGUISHING PRIORITIES

These priorities **distinguish this persona**
from the other designer persona

TOP PRIORITIES

- Being able to play safely and limit possible injuries
- Having opportunities to swing
- Being thrilled or challenged
- Having opportunities to sit with friends
- Having space to play games on a soft surface
- Having opportunities to perform or pretend using imagination

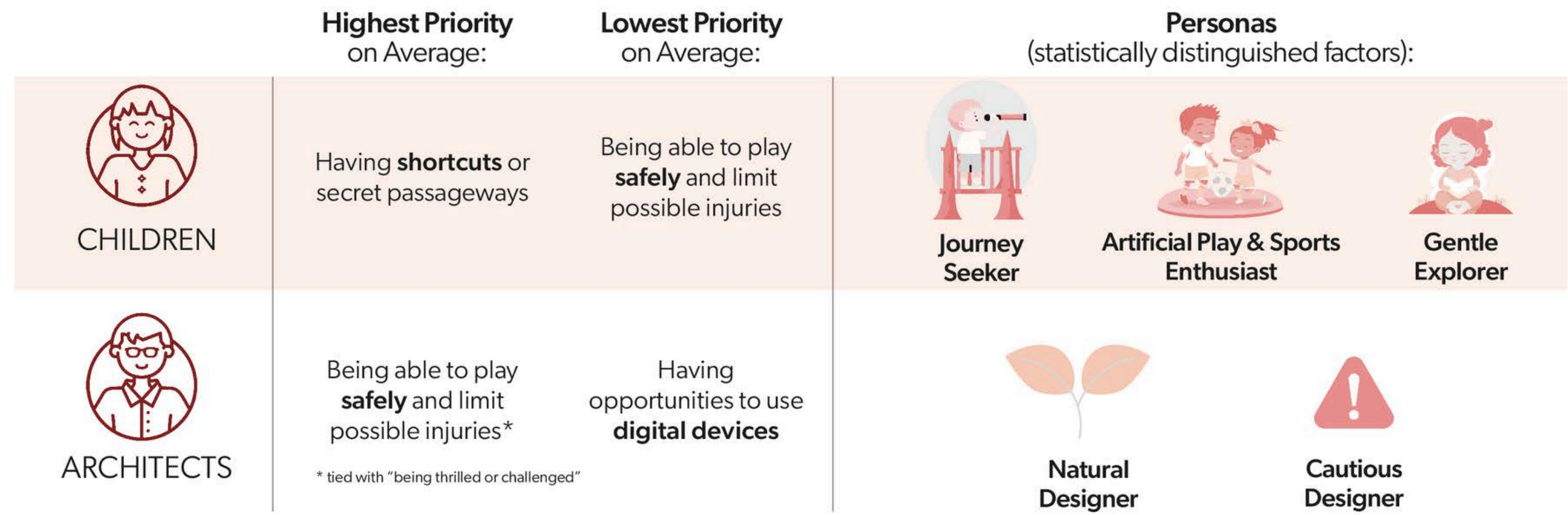
HIGHER than other persona

- Being able to play safely and limit possible injuries
- Having opportunities to swing
- Having opportunities to perform or pretend
- Having shade from the sun
- Having opportunities to slide
- Having opportunities to sit alone
- Being in a garden
- Having lots of sensory variety

LOWER than other persona

- Being high up or having lookouts
- Having opportunities to jump on, off, or into things
- Having a quiet space to rest or hang-out
- Having opportunities to hide or hang out in small, enclosed spaces
- Seeing or interacting with plants
- Seeing or interacting with animals

Analyzing Unique Viewpoints



We used Q-Sort data to generate:

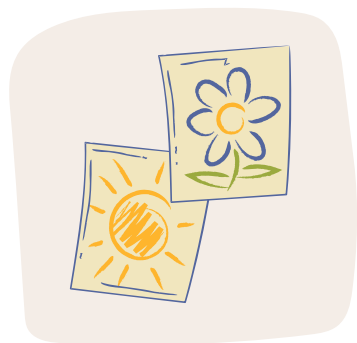
- 1. **Mean scores** (above left) for each experience statement. This revealed highest and lowest priorities on average for children versus designers.
- 2. **Personas** (above right) using factor analysis. This revealed statistically unique viewpoints among the children and designers.

Priority Synthesis Takeaways

- 6 to 10 Experiences were consistently top priorities across activities and both student groups.
 - **Playing organized games (on soft surfaces)**
 - **being high up or having lookouts,**
 - **climbing/hanging,**
 - and **being thrilled / challenged**
- Analysis also revealed high importance of:
 - **having shortcuts or secret passageways.**
 - **having opportunities to hide or hang out in small, enclosed spaces**
 - **dynamic, challenging spaces** for physically active games
 - as well as **cozy and calm refuge spaces** for restoration and socialization
- Despite many similarities, there were also **clear differences in priorities among different types of students**, some are looking for challenge, adventure and high activity, while others are seeking quieter and more restorative activities and spaces - **not all children are seeking a highly active space, and not all children want to do the same activities everyday.**
- Final designs reflected:
 - A **keen desire for variety** - in the types of spaces (for single and small groups to large groups; from large and open to small, cozy or hidden) and activities (from very active to quiet or social).
 - A **wish for complexity and challenge** - e.g., spaces that offer **exciting and diverse combinations of activities**, at different levels of challenge; **wish for thrills** provided by higher, faster, “twistier” elements; it isn’t the provision of a play structure that is appealing, but the provision of a complex and varying structure that children can occupy or move through and across in exciting ways.

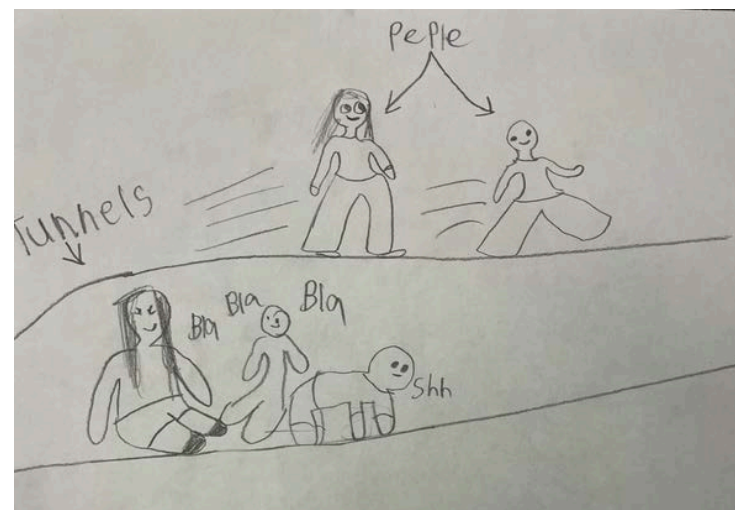
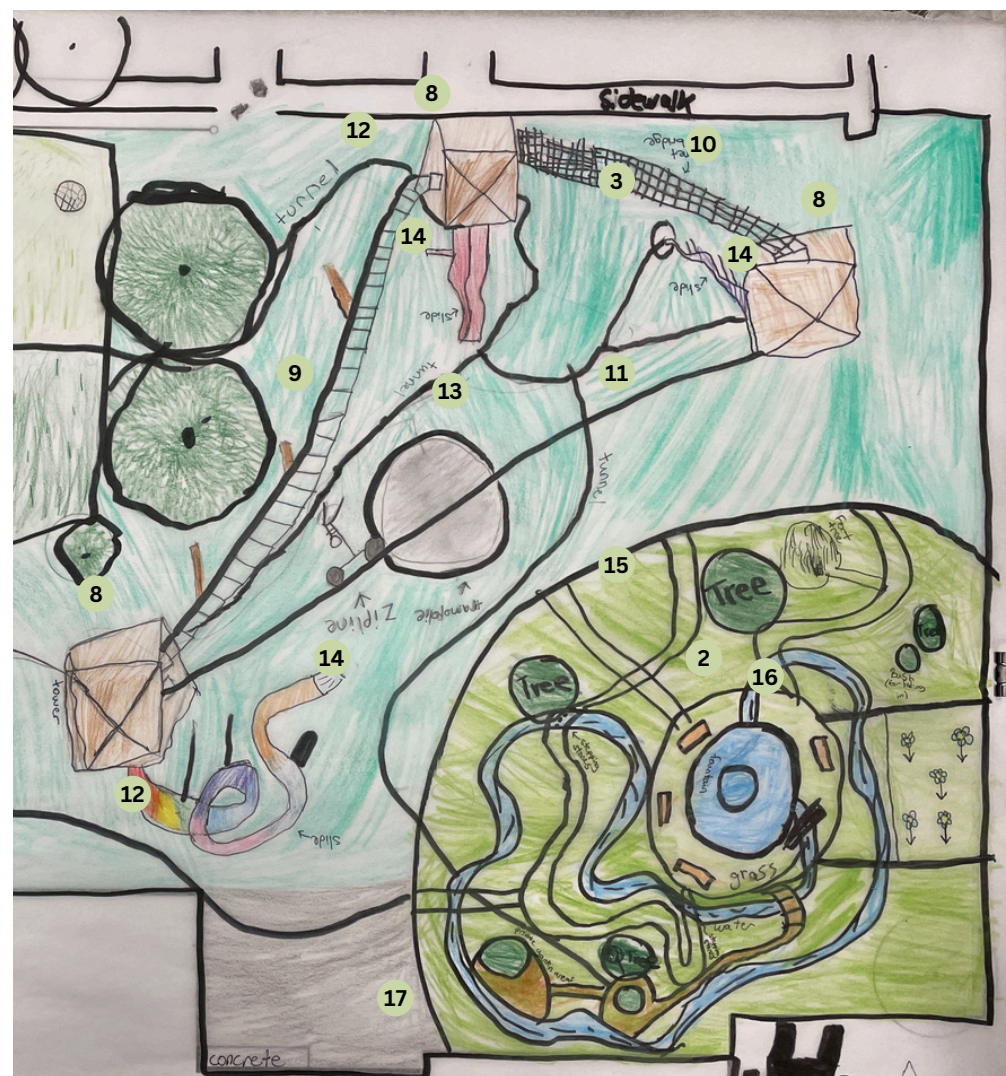


Translating Co-Design Program Outcomes



Integrate Rich Qualitative Data

Integrate photos and drawings to add depth of meaning to umbrella experiences



Unique Features Identified by Team

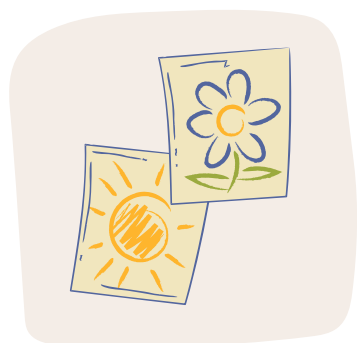
1. A fountain in the garden covered in mosaic
2. **Tunnels that connect to structures in the playground**

Final Site Plan

1. Shelter
2. Benches
3. Sledding Hill
4. Grassy Area
5. Swings
6. Rubber/Surface Tile
7. Glass Dome
8. Tower
9. Bridge
10. Net
11. Zipline
12. **Tunnels**
13. Trampoline
14. Slides
15. Garden
16. Fountain
17. Concrete

Analyzing design drawings helps us deepen our understanding of umbrella experiences and related patterns.

Tunnels are used in their design to support the umbrella experience of “**using shortcuts and secret passageways**” but also “**being covered/ hidden**” and “**being in quite places.**” Tunnels also serve to **connect the playspace** allowing for **fluid movement** across it. Across all teams, participants drew elements that connected the playspace and allowed them to navigate space in non-traditional ways (including by zipline, walls, and other features).



Integrate Rich Qualitative Data

Integrate participant quotes, thickly described context, and minority voices

Quotes and context deepen our understanding of “**Using shortcuts and secret passageways**”

Embedded **values** of **non-rigidity, novelty, escape, & connectedness.**

Highlight differences in opinion as well: In addition to considering quotes and context that reveal insights about experiences favored by the majority, facilitators should also pay attention to preferences that contradict the norm. All participants won't have the same priorities so look for opportunities to also elevate and speak to minority voices.

“

The child expressed with frustration, “they closed up the holes in the fence.” Other children responded enthusiastically with one punching their fist in the air pronouncing, “gaps are fun!” and another saying “we would rather have it open.”

”

“

One child explained their ideal playspace:
“...mine has an obstacle course underneath. And it has underground tunnels that pop people out in random places. Well, not random places; there would be signs, like subway stations.”

”



Develop Design Recommendations

Leverage your knowledge of participant priorities to create a set of design recommendations. It should be clear how these support and honor participants' highest priority umbrella experiences.

Create spaces of **movement**, **novelty**, and **escape**

...affording opportunities to **use shortcuts and secret passageways** and **be covered/hidden**

Playspace elements should stimulate creativity and exploration. Hidden corners, tunnels, and ambiguous spaces provide a sense of intrigue and escape. Design spaces so that they may be used for multiple purposes and types of play.



Tunnels create a sense of mystery and secrecy, and also serve as hiding areas



Maze-like play area allows for fluid creative and imaginative play experiences



Nooks can serve as a climbing structure as well as a refuge or enclosed play space



Develop Design Recommendations

Leverage your knowledge of participant priorities to create a set of design recommendations. It should be clear how these support and honor participants' highest priority umbrella experiences.

Create **authentic challenge** through **complex, connected** play structures

...affording opportunities to **be high up or have lookouts, climb/hang**, and **be thrilled and challenged**

The playspace should have challenging, highly active play areas for a range of dynamic movement, allowing children to get high up to lookouts and descend quickly via features like high, 'twisty' slides and ziplines.



Net bridges provide challenging (but transparent) routes to climb up and across



Include unique, complex, multi-leveled structures that invite exploration



Create various dynamic and challenging climbing routes



Develop Design Recommendations

Leverage your knowledge of participant priorities to create a set of design recommendations. It should be clear how these support and honor participants' highest priority umbrella experiences.

Provide opportunities for **restorative** and **nature-based** play

...affording opportunities to **be in nature**, have **sensory variety** and **be in quiet spaces**

Some children prioritize spaces of quiet reflection over spaces of physical challenge. The playspace should provide opportunities to sit, talk, and do quiet activities alone. Create garden spaces with integrated seating, pathways, and sensory variety.



Weave seating into garden or planter spaces, providing small spaces for sitting alone or with others



Integrate sensory-rich elements like water features or aromatic plants



Provide shaded, nature-dense quiet spaces with privacy to read or draw

Design Recommendations

- what kinds of player personas might be represented by your priority list?
- what design recommendations might you suggest that would honor these priorities but also allow for diverse opportunities that would satisfy different player personas?
- Write out your top 3 design recommendations (on the back of your sheet) that could guide designers looking to honor your group's priorities and preferences?

Insights & Lessons

- children are **more than capable of articulating** their design needs and priorities – given the **right tools and opportunities**
- **longer engagements** give children time to iterate and refine ideas, accommodate diverse/differing perspectives – and get past the ‘rollercoaster and cotton candy fountain’ stage
- employ **multiple, hands-on activities** that don’t rely too heavily on literacy
- program should include **opportunities for individual children** to express their ideas and preferences – not just within group activities
- **focusing on priorities experiences** allows child priorities to be identified but still **allows professional design team flexibility** in how they will accommodate those priorities
- **have a systematic plan for capturing and synthesizing priorities**
- **be VERY TRANSPARENT with children throughout** about their role, how their work will inform design, practical considerations, maintain realistic expectations
- **professional design/planning teams should commit to returning** to child participants to demonstrate how their ideas and priorities were honored

Resources

Access a copy of the CoDesign
Playbook & Supplementary
Materials



See DECA Lab website at
www.decalab-cornell.com for
more publications & resources

Contact:

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DECA Lab
Designing Environments with
for Children & Adolescents

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Any use of or reference to the
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