

SONA

Yalp
interactive
A NEW WAY TO PLAY

INCLUSIVE PLAY AT ITS CORE

FEB 2021



**A NEW WAY
TO PLAY**

Introduction

Everyone has the right to play

Playing outside should be available for everyone, children with or without a disability. That is Yalp's mission and vision. Physical activity throughout for example the school day increases academic performance, improved behavior in the classroom, and provides health benefits for students^[1]. The Netherlands has more than 200.000 children with motor, visual, hearing, mental, or multiple disabilities. For a large part of this population, playing (together) is not accessible, or there are too many (physical) barriers. People with a disability or chronic condition play, play sports, or exercise less (34% versus 63%) than people who do not have a disability^[2]. Inclusive play is limited based upon the numerous physical and social barriers for children with disabilities^[3].

The innovation challenge

Representatives of sport, municipalities, businesses, civil society organizations, and VWS (Ministry of Health, Welfare, and Sport) signed the National Sports Agreement "Sport unites the Netherlands" in 2018. The Sports Agreement's goal is to ensure that every Dutch person can enjoy sports and exercise during their whole life. The VWS joined forces with Sport Innovator to create a challenge for innovative concepts that ensure that children with and without disabilities connect playfully.

Through StartHubs Innovation challenges & hubs, Yalp entered and won the challenge on the 6th of December 2019 with the Yalp Sona Interactive dance and play arch and a research & pilot project with the following question:

"To what extent and under what circumstances would children with disabilities (physical, intellectual, and sensory (visual and auditory)) or a combination of these interact playfully with children without disabilities under the Sona?"

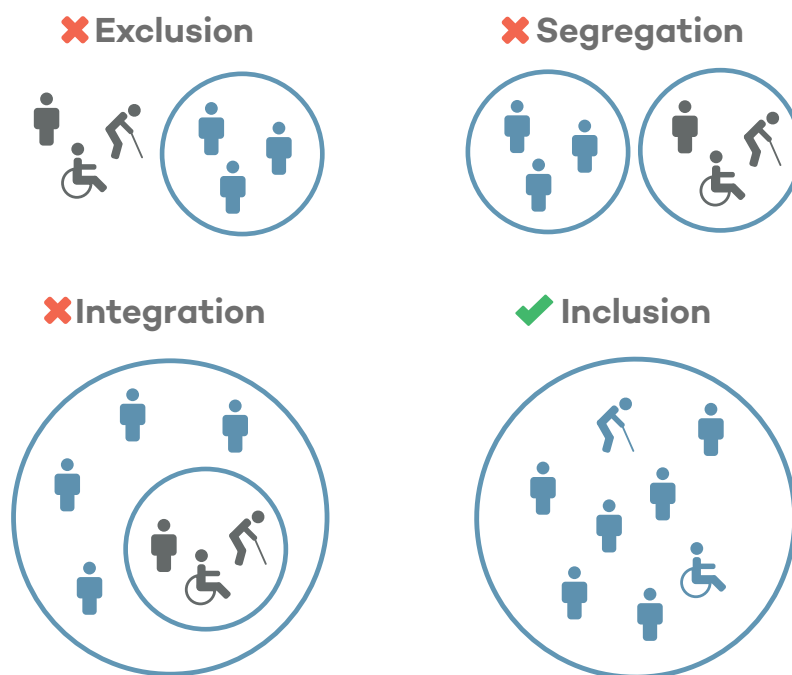
This document is the result of a year of desk research, talking to experts and end-users. We developed and launched a first pilot with improved games and collected 2 months of play data and expert reviews with these new inclusive games.



LET'S START WITH THE DEFINITIONS

The need of every user is different

Inclusion means different things for different people ^[4]. Therefore it's important to first start with a few definitions. Inclusive play aims to fulfill all users' needs ^[5], but with every user being different, this creates a conflict between other user's needs. Developing games for specific target groups offer great play experiences but are aimed towards player preferences. In the same way, different players like various genres of games. Users end up playing in four different scenarios as shown in the overview^[6] below.



“We’re not trying to design for all of us, we’re trying to design for each of us. If we design for people who have a unique need, it benefits people universally.”

◆ Bryce Johnson, a senior inclusivity designer on Microsoft's Xbox team^[7]

Inclusion vs Exclusion

Competition creates inequality but offers a specific playstyle for a player preference: competitive play.

Exclusion

It aims to fulfill the needs of a part of the users.

Separation: Segregation

It aims to fulfill all users' needs but divides a single play space into multiple play spaces.

Separation: Integration

It aims to fulfill the needs of all users and creates separate areas within a single play space.

Inclusion

It aims to fulfill the needs of all users within a single play space.

Types of Design

When designing solutions for play spaces, it's essential to be aware of three different ways of developing a solution to achieve inclusion^[8].

Prescriptive Design

Design a piece of equipment or environment specific to a small user group or individual based on a remedy to minimize or compensate for the group's or individual's functional limitation.

Accessible Design

Design a site, building, facility, or portion thereof that complies with the minimum accessibility standards^[9].

Universal Design

UD is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design^[10].

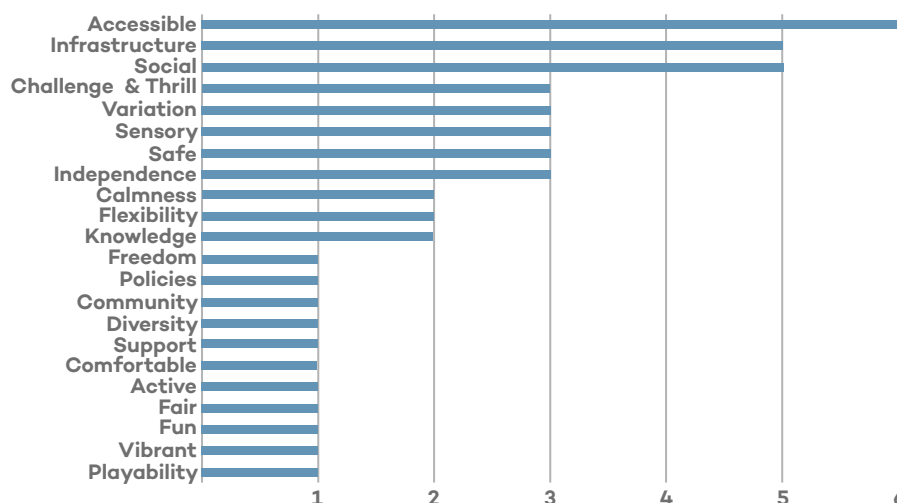
Field of Expertise

The current state of inclusive design principles

Inclusive design is not a new area of expertise. Many play equipment distributors and developers, including Yalp, have different design approaches when it comes to inclusion. It's crucial to stay up-to-date and review these principles yearly, based on new insights, research, and experiences. We've collected the most recent inclusive design principles of key experts in the field and ranked them.

- Lappset Inclusive Design [11]
- Yalp All-In Concept [12]
- 7 Principles of Inclusive play by Playcore [13]
- 6 Principles of Inclusive play by Hags [14]
- Inclusive play space by Hags [15]
- PIPA Checklist [16]
- Kompan Universal Playground Design points [6]
- A guide to creating accessible play spaces by Rick Hansen Foundation [17]
- Inclusive Play Space Guide Framework [18]
- Inclusive Indicators [19]
- Design Considerations [20]
- 10 evidence based best practices [21]

Inclusive Expert Design Principles



290 Sona locations around the world (2020)

The number of Yalp interactives all over the world is growing every year. All of our products come with the ability to connect to the internet, and this information is not only used to manage a product remotely or prove the play value for a customer. We also use all of these statistics to improve and update the games library continuously.

Yalp's own expertise is not only based on (desk) research, but also on real-life application and direct contact with the customer, managers, and end-users.



Identify Obstacles

Every user is an expert

The player, player's attendant, parent, or teacher knows best what they need and like in a game^[22]. Every case is different. Therefore, it's essential to give the right information about which games are inclusive and which potential barriers to play are available in the game to enjoy the experience. After many meetings with experts, end-users, and attendants, we've collected a clear and easy list of potential obstacles. This way, the user can decide for themselves if they want to play the game. When playground equipment is too complicated for children with disabilities, they are less likely to use it for fear of improper use, leading to isolation^[23].



Visual

Colors

The game uses colors to identify elements or players.

Shapes

The game uses shapes to identify elements or objects in the game.

Numbers

The game uses visual numbers to identify players or elements in the game.

Letters

The game uses letters on the product to identify elements in the game and required to progress in the game.

Words

The game uses words on the product, and reading these words is required to progress in the game.

Text

The game uses sentences on the product, and reading these sentences is required to progress in the game.

Icons/Symbols

The game uses icons and/or symbols on the product to identify elements in the game. Understanding these icons/symbols are essential to progress in the game.

Images

The game uses images on the product and are essential to progress in the game.

Auditory

Music

The game contains music and is essential to the experience of the game.

Sound Effects (SFX)

The game contains SFX, and hearing these sound effects are essential to the game experience.

Voice

The game contains voice samples, and understanding these are required to play the game.

Songs

The game contains recognizable songs and is essential to the experience of the game.

Audio Cues

The game contains audio cues that help the player to progress in the game.

Gameplay

Rules

Following rules or completing tasks in order are required to fully enjoy the game.

Goals

The game includes a goal and must be completed to finish the game.

Difficulty Changes

The game includes automatic changes in difficulty.

Levels

The game includes different levels and/or changes in levels.

Win/Lose

Players can win or lose the game.

Scores

The game rewards the player with a score.

Competition

The game puts players against each other with a potential winner.

Turns

The game includes turns; players must sometimes wait.

3 Cs of Inclusion

Yalp's Inclusive Design Principles

The higher up in the process, the more impact you will be able to make

At Yalp, we have three action points for inclusion. The 3 Cs of inclusion cover entirely every step of the process needed to create and design an inclusive play space. The higher up in the process, the more impact you will be able to make. Many teams often focus on the content, but this comes later for better and longer-lasting effects.

Context

The first action is to create as early on in the project the right context, policies, and awareness^[24] for the play space. Without this, the goals will be unclear, there will be no processes to share the playground's existence, and the playground's content will not match the users' needs.

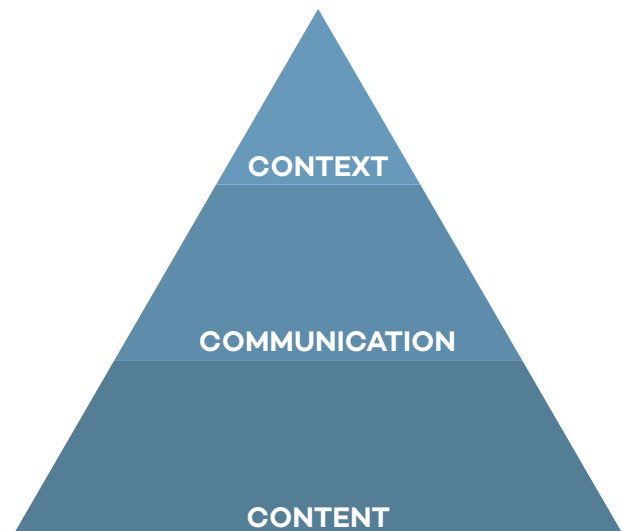
This process involves sharing knowledge and wishes with the playground design team and should define goals, users, and users' needs. Involve the right people, share knowledge of inclusion within the group, try out the products you would like to place, and discuss the team's wishes, chances, and opportunities. Involve the community^[25], parents, schools, teachers, and end-users, reflecting every group of end-users. Think about the practicalities. Make sure the location and distance to the playground is not an issue. The site is accessible and provides the required facilities.

Communication

Share information actively, go out, and try to reach potential users and visitors. The social barrier is bigger than the physical barrier ^[26]. Users must know about the play space to be able to experience it. Often users are afraid of the unknown or simply don't know about a play space's possibilities or existence.

Communication and transparency are more important than the actual play space itself.








Communication and transparency are more important than the actual play space itself. At the beginning of the process (and during the context phase), finalization, and years



after completion, it's critical to communicate about the play space and their goals. Information about the play space, facilities, accessibility, and offerings should be available for a user or a visitor.

Content

When you complete the first two actions successfully, you will be able to create excellent content. The content should match each of the following standards:

-  **Challenge**
The product should deliver thrill, challenge, and different levels of active play.
-  **Independence**
The user should feel independent when interacting with the product.
-  **Safe**
The product should be safe for the user and create a safe environment to enjoy the experience.
-  **Sensory**
The product should stimulate the senses of the user.
-  **Variation**
The product should include enough variation.
-  **Flexibility**
The product should be flexible enough to adapt to the needs of the user.
-  **Calmness**
The product should support moments of calm.

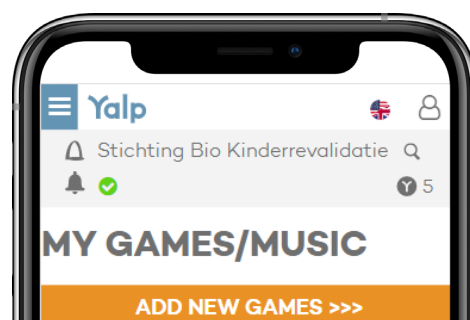
KEY INCLUSIVE PRODUCT FEATURES

Fully inclusive through flexibility

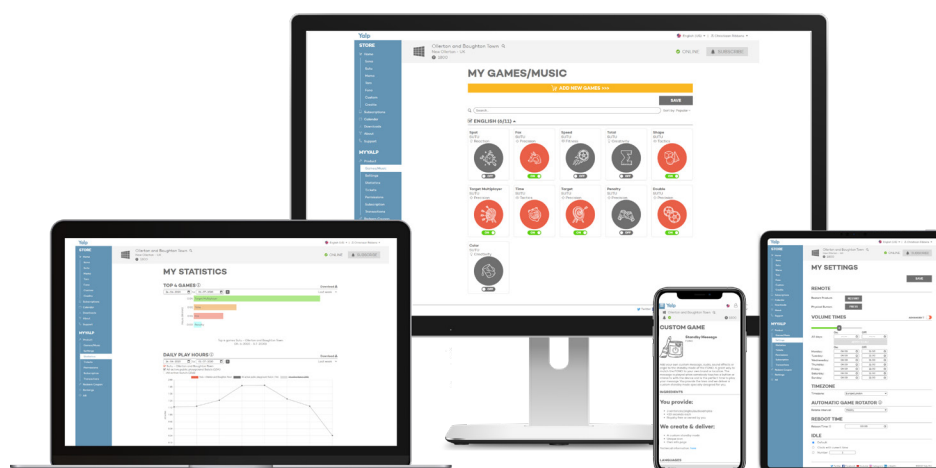
Not every game will fulfill every user's needs, but we offer many games with different experiences for different player preferences and playstyles. With the flexibility of changing and tweaking games through our My Yalp platform, the games and content can be adjusted to match the users using the product at that time and is a big facilitator for play^[27].



- 1 Movement Detection**
Detects the movement of any player. Tall or small, standing or sitting.
- 2 Bright colors**
The arch and floor include fun sensor elements.
- 3 Ear-Level Speakers**
The audio is directly aimed at the players.
- 4 Accessible button**
Button on the player's height.
- 5 Flat Surface**
Easy access to all. One continuous surface in order for mobility^[28]. No need for ramps.
- 6 Shape & track**
Easy recognizable shape and form. Children recognize how it should be utilized^[29]. Circuit-style structure encourages children to navigate the playground and maintain continuous activity^[30].
- 7 Circular Setup**
Creates a safe and recognizable play space. It promotes social engagement^[31].
- 8 Adjustability**
Change the game with a press of a button or visit My Yalp.



MY YALP, YALP+ & INCLUSION



Clients vs end-users

It's important to understand that when we talk about clients and end-users, we talk about two different groups. The clients are the people who purchase a product and are users of the My Yalp portal. The end-users are often people who do not have access to the portal, but they are the people who actively use the product. But there's an extra group of people here who sometimes gets forgotten. Experts and managers of a product at a location are often the missing link between a client and the end-user. A teacher, a person from maintenance or a coach are great examples of people at a location who can really stimulate the use of a product and play at a location. Giving these people access to the portal can really make the difference.

Inclusion here is not only looking at the end-user or the person who purchases the product. Inclusion also means giving access and include the people who manage a product or are the direct link to the end-users.

Online Portal

My Yalp (my.yalp.com) is the client's portal to remotely manage and control an interactive. Managing a product in shorts means enabling/disabling games, change the settings, and adding newly released games. The portal also provides Yalp and the clients with relevant statistics, most popular games and most popular time periods during the day. We understand that not every client wants to fully tweak and change a product, but the people who want to can.

The online portal is always updated with new features, insights and new games & content.

Yalp+

Yalp also provides the Yalp+ (app.yalp.com) webapp, which can be accessed by the end-user directly through a QR code on the product. This gives them extra information about the games and a limited amount of control of the product.

Giving the end-user complete control over the product and the games they want to play can be an extra tool in the toolbox towards inclusion of the end-user. Yalp+ is still in early development and the results of this project will be a big part of the foundation of the Yalp+ features we will develop in the future. The focus should always be first equipment that could be accessed by children with disabilities without assistance from an adult^[32].

For clarity we've excluded Yalp+ from this research and pilot project. Especially because not in all cases the end-users have access to a mobile device or the internet.



4 steps 2 social play

① Access ——— ② Choice ——— ③ Play ——— ④ Together

1. Physical & social barriers

Talking to users and experts show that the focus often does not lie on playing together, but first making it possible for the end-users to play. Having access to a playground and being able to access the play equipment can be the first obstacle players experience. Reaching the goal of social play requires, therefore, the removal of all these barriers. Negative perceptions of typically developing students regarding the ability of their peers with disabilities to play is another social barrier. This leads to children with disabilities being stereotyped and excluded from social play^[33]. Playing together should come freely from the players and playing alone if the player desires so, is not bad. But when the players want to play together, there should be enough opportunities and choices.



2. Create choice & opportunities

Inclusive playgrounds are designed so that everyone can freely move, play, and mix within these playgrounds, which encourages all children to interact with each other and play together. We try to create as many opportunities as possible. All children will not always be able to or want to participate in all activities, but there should always be a real choice of play activities in an inclusive playground. Social interactions start with a conversation between children. This can be as simple as asking about what they would like to do next or share play experiences. Any other social connection between players will evolve from this first interaction. The playground environment fosters hands on learning and social play that is not implemented in the structure of the classroom^[34]. It also improves the student's ability to learn and participate^[35].

3. Play equipment for all

The aim here is to give equal access to and have everyone play^[36]. Implement the inclusive design principles so that the play equipment is suitable for as many children as possible, regardless of potential functional or physical impairments. What's important here is to know that how the children play and perform these activities can be completely different. Asymmetrical play is common between players, and also role play stimulates various activities between players. When everyone is playing next to each other social play will emerge.

4. Apply social game mechanics

As mentioned before, the need for everyone playing together at all times is not a goal in itself. But where we create opportunities for players to interact with the play equipment's design, the games can stimulate social play. Below are a few examples of game mechanics we use to encourage players to play together.

- ↔ **Turns**
Turns will require the players to interact with each other to talk about who's turn it is.
- 🤝 **Cooperation**
Beat the game together. Adding the option for collaboration creates friendships.
- ✓ **Voting**
Let players decide who is the winner or who danced the craziest.
- 👤 **Roles**
Give players different roles: 1 player leads, others follow.
- 🏆 **Rewards**
Stimulate sharing experiences, scores, and earned rewards.
- 👥 **Spectators**
Promote spectator involvement. Turn spectators into players.

Games & Inclusion

The 3Cs in practice

Talking to our experts at three locations focused on special needs education, special needs recreation, and special needs care/support, we mapped out the obstacles and problems in three key areas related to play.



's Heeren Loo
Care/Support



Stichting Bio
Recreation



Witte Vogel
Education

Knowledge: Obstacles related to knowledge or communication

Location staff is aware of the product's existence	✗	✗	✗
Instructions were given by the organization	✗	✓	✓
Instructions were given by Yalp to the organization	✓	✓	✓
A person in the organization actively promotes the product	✗	✓	✓

Accessibility: Obstacles that are part of the location or context

Product installed in close proximity of the users	✗	✓	✓
Users have free and easy access to the product	✓	✓	✓
The product can be accessed by anyone on this location	✓	✓	✗
The experts have used and experienced the product	✓	✓	✓
The experts have used the product multiple times (3+)	✗	✓	✗
Children (4-12) play on the product	✓	✓	✓
Teens (12-18) play on the product	✓	✓	✗
Adults (18+) play on the product	✗	✓	✗
Custom games installed on the product	✗	✗	✓
Players play alone on the product	✓	✗	✗
Groups (sized 1-4) play on the product	✓	✓	✓
Groups (size 6-8) play on the product	✓	✓	✗

Gameplay: Obstacles that are part of the game or content

Users know and understand numbers	✓	—	✗
Sound effects can be part of a game	✓	✓	✓
The users know and understand shapes	✓	✓	✗
The users know and understand colors	✓	✓	✗
The users know and understand numbers and colors	✗	✗	✗
The users can complete sums	✗	✗	✗
The users can rhyme words	✗	✗	✗
The users prefer short instructions	✓	✓	✓
The users prefer long instructions	✗	✗	✗
Theming doesn't distract from the game	✓	✓	✓
The game can automatically change difficulty	✗	✗	✗
Player selects game & difficulty	✗	—	✗
Companion selects game & difficulty	✓	—	—
The game can include the use of penalties	✗	✗	✗
A companion is present with the user	✓	—	—
Loud music and sound effects fit the target audience	✓	✓	✓
The current music selection fits the target audience	✓	✓	✓
The game's speed and tempo fits the target audience	✗	✗	✗
The current voice actor fits the target audience	✓	✓	✓
The users want competitive gameplay	✗	✗	✗

MAKE THE START BUNDLE INCLUSIVE

A critical look at the first 5 Sona games

The start to inclusion with our games begins with the first 5 games every product starts with. Every expert we talked to clearly mentioned that every game's compatibility is different on a per user basis. Some users like a game, but others struggle to play or are not interested. Learning from these 5 games, we can implement our lessons towards our existing and new games. We collected the most common pros and cons of these games from our experts.

The results show us a three-way division between the 5 games. Freeze & Moon Monster are both games that, even with some of the weaknesses, can and/or are enjoyed by the largest group of players in these locations. But when we look at Codebreaker & Reaction Race, the dependency on numbers is the main obstacle, more so with the game Codebreaker. The open-ended nature of Runtime makes it great to adapt the game for every user, but independently a user could require some help, or a more structured way of play is required.



Freeze

Dance and stand still when the music stops.

- | | |
|----------------------------------|----------------------------------|
| ✓ Anyone can join to dance | ✗ The name 'freeze' is confusing |
| A large collection of fun songs | The command should be 'stop' |
| It's similar to a game they know | Detects movements too quick |



Moon Monster

Flee or get caught by the monster.

- | | |
|------------------------------|--------------------------------------|
| ✓ A monster is fun! | ✗ It could use a bit more variety |
| Two commands are easy | The commands could be more inclusive |
| The difficulty is just right | |



Runtime

Use the arch as a stopwatch. Start & finish area under the arch.

- | | |
|---------------------------|----------------------------------|
| ✓ Can use the environment | ✗ Player movement can be limited |
| Flexible in how to use | Too open-ended |
| | Requires context |



Codebreaker

Remember the number sequence, and stand on the right numbers.

- | | |
|-------------------------------|------------------------------------|
| ✓ Great for who knows numbers | ✗ Not enough time to enter a code |
| Trains memory | The difficulty goes up too quickly |



Reaction Race

Stand on the number you hear.

- | | |
|-------------------------------------|--------------------------------------|
| ✓ It can be used to explore numbers | ✗ No instructions |
| Great for who knows numbers | Automatically increases difficulty |
| | Not everyone knows all numbers (1-9) |

THE GAME IMPROVEMENTS

Improve or a new game?

These five games are our most popular games and have proven themselves over the last 10 years to be enjoyed the most based on hundreds of thousands of hours of play. For these games, we can definitely say that the core gameplay works and is a lot of fun. But as we see with these 3 locations, there are still inclusion obstacles present.

Our goal here is to improve the existing games and not create five completely new games. Completely changing a game can “fix” a problem, but this can mean removing the offending game component or mechanics from the game and changing the core gameplay. We’re looking at finding solutions for these obstacles while keeping the core gameplay.

3 ways to fulfill a user’s needs

The three-way division in the games highlights the different ways a game can fulfill a player’s needs. This can be based on skill, preference, or interest. We’ve defined three ways to fulfill a player’s need.



1. Complete

The core gameplay offers for as many players a fun experience without any obstacles. Every player can experience the complete game.



2. Flexible

The game includes a competitive/difficulty component that can be changed or turned off. We’ve made the game flexible so as many players as possible can enjoy it. The users determine which parts they would like to see in the game.



3. Thrill

The game offers a thrill experience or focuses on a specific game mechanic or target audience. It offers something amazing for a smaller group of players, but by doing so, it excludes certain players.

Game Cards & Tags

We created single page game cards to summarize the games, components, barriers, and design principles for quick and easy communication based on these changes. These labels are also found on My Yalp. The game cards can be found as an addendum in this document.

2.0 Game versions

For the 2.0 game versions, we’ve excluded the thrill category. The new games resulted in completely new game concepts, or the wishes were completely different from the starting games. This makes the thrill category great for custom games or games to fit a specific location or context perfectly. The other three games, Freeze, Moon Monster, and Reaction race, received the following upgrades.

Freeze 2.0



- Replace ‘Freeze’ with ‘Stop’
- Record new instructions
- Removed the fail samples
- Add fun commands to stimulate dancing
- Made it easier for groups to succeed

(Moon) Monster 2.0



- Simplified the instructions
- Combined the 4 existing monsters
- Removed the ‘fake monster’
- Add positive alternatives next to failing
- Simplified the commands
- Added more inclusive hints
- Balanced volume levels of music & SFX

Reaction Race 2.0



- Added a simplified instruction
- Removed words like running/walking
- Added ‘fail’ samples which encourage
- Disabled automatic difficulty change
- Disabled the game-over state
- Allow enabling of a competitive mode

INCLUSION INCREASES PLAY

The play hours after 2 months

We installed the 2.0 games (and removed the 1.0 versions) on the three locations and notified the experts. First, we look at the difference in play hours and mostly the popularity of the games to see if these games are enjoyed more than the previous year during the same time period. The numbers are impressive when you consider that during 2020 access was limited at certain times.



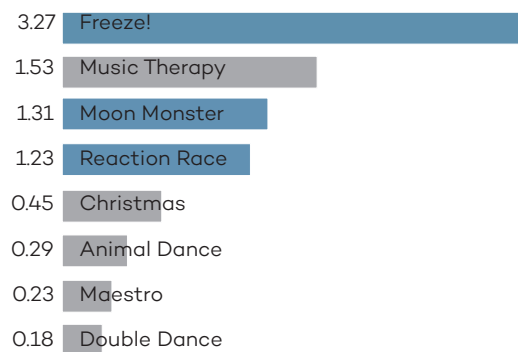
Witte Vogel

We specifically created the game Music Therapy for this location. Freeze 2.0 has defeated this game, and with the other games, we're seeing similar times as the Music Therapy game, showing a big increase in popularity and use.

04-12-2019 to 24-01-2020



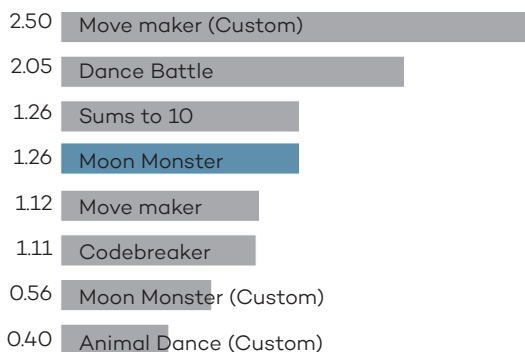
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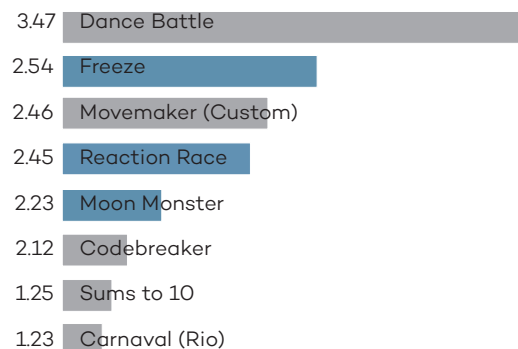
Stichting Bio

Two games of the start bundle were disabled on this product. Now all three of the 2.0 games are part of the Top 5 games on the product. Dance Battle is a great example of another completely inclusive game.

04-12-2019 to 24-01-2020



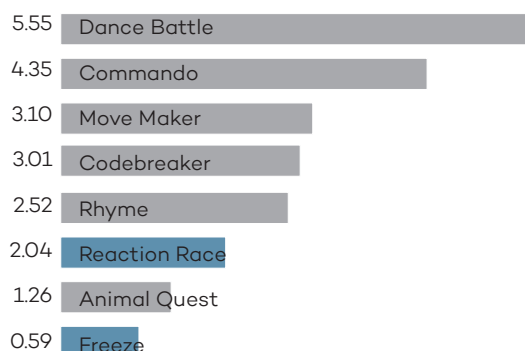
04-12-2020 to 24-01-2021



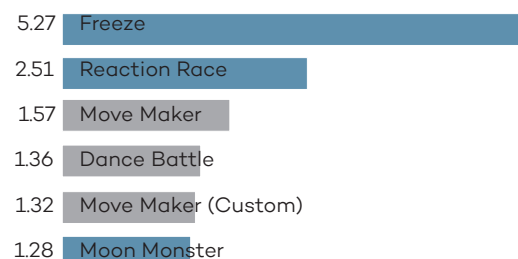
's Heeren Loo

The start bundle games were performing poorly here. But with the changes, these games have gone from the bottom games to the most popular games on the Sona.

04-12-2019 to 24-01-2020



04-12-2020 to 24-01-2021



Expert Opinion



Annette Oyevaar

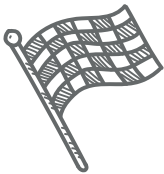
Physical education teacher Lichtenbeek

“Today, I tried playing on the music arch with children from learning routes 3 and 4 (children with learning disabilities) and had a great time with it.”

Integration takes time

The experts at the different locations are now slowly using the new games, sharing them with the children and experiencing how they work and enjoy the new changes. The first impressions are positive, but only the Stichting Bio location could use and play the games multiple times with different groups of players.

Reaction Race 2.0



The tempo and speed of the game now fit with the target audience. This was a big problem in the past where the game went way too fast, and the players weren't able to move towards the next number. The numbers 1-9 are now randomly selected from the start.

“I would do 1-5, and then 6-9, then 1-9 mixed. Or am I too critical now?”

But this can be a problem if the players only know the first numbers. With Reaction Race being a flexible game, this toggle is a great suggestion as a simple option to be enabled/disabled. But this could not always be necessary and should be something the expert close to the product or user can change quickly.

Freeze 2.0



The large selection of songs used in this game makes it different every time. The change to using the word 'stop' is apparent, and the arch clearly communicates who was the last person who stopped dancing. The assignments are great, but the limited assignments now need to be extended with more variations.

The voice is important

The new prototypes used a temporary voice actor for prototyping multiple variations of the samples quickly. But the result between a professional and amateur voice actor is substantial, and the end-users really noticed this. A great voice actor is funny, energetic, and sounds really positive, and this can make all the difference when playing a game.

Monster 2.0



The changes are quite substantial, and it seems they are paying off. It shows that a more complex or detailed game doesn't necessarily result in a more complicated game. The extra monsters and diversity are valued highly, not only by the children.

“Nice adjustments, it (Monster) has now been expanded with assignments, and the children went all out, the teachers too!”

The only biggest missing element here was a joke that was part of the original game. The original game repeated the joke many times, but now with the large variety, the joke would be a great addition.



Conclusion

Define & design inclusion

Designing for inclusivity starts with clear definitions. Creating clear distinctions between the different approaches and design philosophies makes it much easier to talk about inclusion and design for inclusion. As a result, we at Yalp redefined our Inclusive design principles to be up-to-date and match the new insights. These design principles will ensure that inclusion is part of any new project, game, product, or complete playground. We see that the first two steps being context and communication, are more important than the final result. Without these two other elements, you will not successfully fulfill the user's needs and create the right content.

The Yalp Sona Interactive dance & play arch already includes many inclusive features. Giving choice, flexibility, and scalability through software really makes sure the content can match the users and create inclusion instead of segregation. Promoting social play is important but not a required element for a user to play. Being able to play and have all the children enjoy the same playground is.

Big impact with (only) 3 games

The first step for big impact is really listening to the experts, being the users or users' companions. Talking to the end-user and not only the client directly is critical in delivering great content. The benefit of digital games & the internet connectivity of the products is improving, tweak, and measuring results remotely.

With only improving 3 games with some small and big tweaks, we've seen a huge increase in the games' popularity in just two months. Even the game Reaction Race, which originally received many critiques based on the use of numbers, has seen a huge jump in use and positive reception with the option to change parts of the game.

The three-way division: complete, flexible, and thrill, creates clarity about what type of game it is and which goals for the users it tries to target. Giving great experiences to smaller groups of audiences isn't a bad thing. Only giving great experiences to a smaller group of the audience is.

Complete inclusive games score big, not only the games we've improved and existing games outside of the start bundle that follows the complete inclusive approach score best on a product across all audiences. The flexible and thrills games see big increases because they fit a specific need of a specific group of users.

The biggest obstacle is time and especially the time it takes to integrate and communicate these changes. Collecting enough feedback and allowing all users to enjoy the games takes time. Luckily, the inclusion of experts and the focus on communication results in ongoing communication between Yalp and the product locations to continue tweaking and improving these 5 games and all Sona games.



The next step

With Yalp's Inclusion Design principles now in place, we keep a close look at the context, but more importantly, we stay in touch with our customers, users, and players. The games and library of games are never finished. The improved games are the first step to roll-out the lessons and design principles on all the Sona games. The first step is doing this on all Dutch products. But with Sonas located in 27 different countries, we will then roll-out these improvements in 27 different languages.

The Yalp Sona Interactive dance and play arch are not Yalp's only interactive. With 4 other products, we will start looking at applying these principles across all our existing and new products.

A playful & bright future

The future of inclusion on Sona, Yalp interactives, and playgrounds all-around the world looks great. Creating inclusive products & games results in a big impact, and more importantly, it results in happy end-users who go outside to be active and play together.

References

- Dills, A.K., Morgan, H.N., & Rotthoff, K.W. (2011). Recess, physical education, and elementary school student outcomes. *Economics of Education Review*, 30, 889-900.
- RIVM (2015). Beweeg- en sportgedrag van mensen met een chronische aandoening of lichamelijke beperking. <https://www.rivm.nl/bibliotheek/rapporten/2015-0064.pdf>.
- Wooley, H., Armitage, M., Bishop, J., Curtis, M., & Ginsborg, J. (2006). Going outside together: Good practice with respect to the inclusion of disabled children in primary school playgrounds. *Children's Geographies*, 4(3), 303-318.
- Casey, T. (2005). Play and Inclusion. URL: <http://www.playscotland.org/wp-content/uploads/assets/Documents/Playandinclusion.doc>.
- Playworld (2019). Inclusive Play Design Guide. Lewisburg.
- Kompan (2020). Play for all Universal Design for inclusive playgrounds. Kompan Play Institute.
- Johnson, Bryce. Xbox Adaptive Controller. 9-11-2020. <https://www.microsoft.com/en-us/garage/wall-of-fame/xbox-adaptive-controller/#:~:text=The%20genesis%20of%20the%20Xbox,gaming%20devices%20to%20wounded%20vets>
- Skulski, J. (2012). Designing for Inclusive Play: Applying the Principles of Universal Design to the Playground. NHCPAD. 29-10-2020. <https://www.nchpad.org/529/2456/Designing-for-Inclusive-Play-Applying-the-Principles-of-Universal-Design-to-the-Playground>
- Skulski, J. (2012). Discover Inclusive Playgrounds A Guide for playground users. NHCPAD. 29-10-2020 <https://www.nchpad.org/fppics/Discover%20Inclusive%20Playgrounds%20Guide-book.pdf>
- Center for Universal Design (1997). The principles of universal design, Version 2.0. Raleigh, NC: North Carolina State University.
- Lappset (2020) Design Principles Sales Manual. Lappset.
- Hartmann, R. (2015). All-in: Omdat iedereen samen wil spelen! Goor.
- Me2. (2016). 7 principles of inclusive playground design. Playcore/Utah State University.
- Hags (2020) Guide to designing inclusive playgrounds. 29-10-2020. <https://www.hags.com/en-us/designing-inclusive-playgrounds>
- Hags (2019) Inclusive Play- Guide to creating inclusive playgrounds. Aneby
- Inclusive Play (2019). PiPA assessment. 29-10-2020. <http://www.inclusiveplay.com/pipa-assessment/>
- Rick Hansen Foundation (2020). A guide to creating accessible play spaces. Richmond
- Yuen, C. Playright inclusive play space guide (2016). Hong Kong
- Casey, T. Harbottle, H. (2018) Free to play a guide to creating accessible and inclusive public play spaces. Scotland
- Amer, M.M.A. (2019) Designing playgrounds for all children: all-inclusive adventure playground for the city of arlington, Texas. Arlington
- Fernilius, C.L. (2017) Evidence-Based Practices for the Design of Inclusive Playgrounds that Support Peer Interactions Among Children with All Abilities. Utah
- Ines Wenger, Christina Schulze, Ulrica Lundström & Maria Prellwitz (2020): Children's perceptions of playing on inclusive playgrounds: A qualitative study, *Scandinavian Journal of Occupational Therapy*, DOI: 10.1080/11038128.2020.1810768
- Bray, P., & Cooper, R. (2007). The play of children with special needs in mainstream and special education settings. *Australian Journal of Early Childhood*, 32(2), 37-42.
- Althuisen, N. (2016) Inclusive play, awareness and action through play-policy. Nijmegen
- Soresi, S., Nota, L., & Wehmeyer, M. (2011). Community involvement in promoting inclusion, participation and self-determination. *International Journal of Inclusive Education*, 15(1), 15-28.
- Engelen, J. (2019). Barriers, facilitators and solutions for active inclusive play for children with a physical disability in the Netherlands. A Qualitative Study. University of applied sciences Utrecht.
- Sobell, K. O'Leary, K. Kientz, J. (2015) Maximizing Children's Opportunities with Inclusive Play: Considerations for Interactive Technology Design. Medford.
- Skulski, J. K., & York, S. (2011). A longitudinal study of playground surfaces to evaluate accessibility: Year one findings. National Center on Accessibility. 1-11.
- Bundy, A. C, Lockett, T., Naughton, G. A., Tranter, P. J., Wyver, S. R., Ragen, J., Singleton, E., & Spies, G. (2008). Playful interaction: Occupational therapy for all children on the school playground. *American Journal of Occupational Therapy*, 62(5), 522-527.
- Yuill, N., Strieth, S, Roake, C., Aspden, R., & Todd, B. (2006). Brief report: Designing a playground for children with autistic spectrum disorders-Effects on playful peer interactions. *Journal of Autism Development Disorders*, 2007(37), 1192-1196.
- Menear, K.S., Smith, S.C., & Lanier, S. (2006). A multipurpose fitness playground for individuals with autism: Ideas for design and use. *Journal of Physical Education, Recreation, and Dance*, 77(9), 20-25.
- Skar, L. (2002). Disabled children's perceptions of technical aids, assistance, and peers in play situations. *Scandinavian Journal of Caring Sciences*, 16. 27-33.
- Prellwitz, M. (2007). Playground accessibility and usability for children with disabilities. (Doctoral Thesis, Lulea University of Technology, Lulea, Sweden).
- Ramstetter, C.L., Murray, R. & Garner, A.S. (2012). The crucial role of recess in schools. *Journal of School Health*, 80(11), 517-526.
- Nabors, L. & Badawi, M. (1997). Playground interactions for preschool-age children with special needs. *Physical and Occupational Therapy in Pediatrics*, 17(3), 21-31.
- The Children's Play Information Service (2008). Inclusive play factsheet. London

Game Card

Freeze

Game Card

Dance and stand still when the music stops.



Play Components

A truly inclusive game that offers a fun experience for the broadest audience possible.

- Dancing
- Moving
- Rules
- Music
- Audio Cues



Complete

Applied Design Principles

Sensory

The music, in combination with audio cues, creates a fun auditorial experience.

Challenge

The game Freeze offers the challenge of reacting to the change in music. Different songs evoke different dancing and moving styles, which adds different difficulty levels.

Independence

The player can start/restart the game themselves. Every player has full independence in how they join the game.

Variation

An extensive set of music and random times between the music and breaks gives this game a lot of variation.

Flexibility

The game allows the players to dance or move as they desire and make the game as difficult as they like. The player has the freedom to decide what happens when a player is the last one to stop.

Calmness

The moments of silence create a break during the game. Stepping outside the ring allows players to enjoy the music without participating directly in the game.

Safe

The players are never asked to leave the game. During the game, the arch only announces the player who last stopped moving.

Game Card

Codebreaker



Thrill

Game Card

Remember the number sequence and stand on the right numbers.



Play Components

A game that offers a great challenge & thrill, but this can be a barrier for certain players.

- Moving
- Rules
- Audio Cues
- Numbers



Applied Design Principles

👁 Sensory

The numbers, music, SFX, and audio cues stimulate the senses.

🚩 Challenge

Codebreaker offers the player the challenge of remembering a number sequence. This number sequence starts small but will increase in size after a few successful attempts. The thrill of the game comes from the pressure to get to the next number. The player will start slow walking to the following number but can decide to run, roll, crawl, or jump to the next number.

👤 Independence

The player can start/restart the game themselves. The player has the freedom to decide on how to move between the numbers; anything is allowed. Reaching a number successfully gives the player a feeling of achievement.

↗ Variation

Different numbers and difficulty levels add the required variation. An extensive set of audio cues gives the game enough diversity for replayability.

🔗 Flexibility

The game increases the difficulty slowly and increases the level quicker when the players are overperforming on a difficulty level.

🌸 Calmness

After every level, the game offers a moment of peace and for the players to enjoy their victory.

🛡 Safe

The player is given unlimited amounts of tries to break the code. The player doesn't require to do anything risky.

Game Card

Reaction Race



Flexible

Game Card

Stand on the number you hear.



Play Components

A game that can be changed between an inclusive and competitive mode.

- Rules
- Moving
- Goals
- Levels
- Difficulty Increase
- Win/Lose



Applied Design Principles

Sensory

The numbers, SFX, and simple audio cues stimulate the senses.

Challenge

The challenge here is to reach the announced number as fast as possible. Remembering the positions of the numbers will improve your reaction. Getting familiar with the game and product will give the player an advantage.

Independence

The player can start/restart the game themselves. Reaching the numbers stimulates independence.

Calmness

After every level, the game offers a moment of peace and for the players to enjoy their victory.

Flexibility

The game increases the difficulty slowly and increases the level quicker when the players are overperforming on a difficulty level.

Safe

The player is given unlimited amounts of tries to break the code. The player doesn't require to do anything risky. They can walk if they desire.

Variation

Randomizing the numbers creates a different sequence of challenges every time. The other victory SFX and audio cues add to the replayability.

Game Card

Moon Monster

Game Card

Flee or get caught by the monster.



Play Components

A truly inclusive game that offers a fun experience for the broadest audience possible.

- Moving
- Music
- SFX
- Audio Cues



Complete

Applied Design Principles

Sensory

The soundscapes part of this game transports the player to a different world without setting a step outside the Sona ring.

Challenge

Players are asked to move around carefully under the Sona. When the monster approaches, they are asked to step outside the ring or to be brave and conquer the monster when he appears.

Independence

This game can improve the players' independence by allowing them to flee or battle the monster.

Variation

An extensive set of audio cues, monster noises, and environmental sound effects increase this game's replayability. A fun fact: occasionally, there is a fake monster.

Flexibility

This game's simple goal to stay in or out of the circle gives the game a lot of flexibility in approaching this game. Sneak, run, roll, fly, or slide; it's all valid in this game.

Calmness

Stepping or staying outside the ring gives players a moment of calmness.

Safe

There is no right or wrong in this game, making this a safe experience for any player.

Game Card

Runtime

Game Card

Use the arch as a stopwatch. Start & finish area under the arch.



Play Components

A game that offers a great challenge & thrill, but this can be a barrier for certain players.

- Moving
- Goals
- Audio Cues
- Scores
- Turns



Applied Design Principles

👁 Sensory

The numbers, music, SFX, and audio cues stimulate the senses.

🚩 Challenge

Players are challenged to create their own track. This can be a complex parcours or a simple touch a post and come back.

👤 Independence

The player can start/restart the game themselves. Players have the freedom to decide what to do and how to use the arch—giving independence and choice to the players.

↗ Variation

Different numbers and difficulty levels add the required variation. An extensive set of audio cues gives the game enough diversity for replayability.

🔗 Flexibility

The free nature of this game allows for a lot of house rules and creativity around this game. It can be used to incorporate the surrounding play equipment.

🌸 Calmness

After every turn, a player can decide when they start again, creating a moment of rest.

🛡 Safe

The arch is a neutral spectator in this game, which gives players a neutral 'person' to provide feedback. The scores are given without judgment, and any finish is a success.



create • innovate • educate

At Yalp, we want to play, exercise, sport, and explore the world because it enriches our lives with a positive contribution to our physical, mental, and social health. We create inspiring environments that challenge both young and old to exercise and play, but it's all about having fun.

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