2026 - CAPSTONE - DNB311

# CHILD-INITIATED OPEN-ENDED CREATIVE PLAY

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3890 WORDS

# ACADEMIC INTEGRITY

## AUTHENTICITY STATEMENT

This is to clarify that to the best of my knowledge, the content of this report is my own work. This report has not been submitted for any subject or for other purposes. I certify that the intellectual content of this report is the product of my own work and that all the assistance received preparing this report and sources have been acknowledged.

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## AI USE STATEMENT

I have utilised Generative AI in this report (Perplexity) to assist in various ways. I have used AI to assist in confirming consistency of APA 7 style referencing in the reference list.

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# EXECUTIVE SUMMARY

Child-initiated open-ended creative play is a prevalent form of play beneficial to development and growth of many foundational skills throughout childhood. Concern has grown for the impact that modern changes have brought to the play space. These external factors can reduce the opportunities children have to engage in this valuable play type.

Triangulation research methodology was utilised to explore and compare the weight of these factors through literary reviewing, benchmarking, surveys and interviews with a range of adults that frequently observe how children play. These findings identified a reduced child-initiated access of loose parts resources in home environments as the most recurring concern. Benchmarking noted incompatibilities of highly open-ended play methods with the home environment through issues related to adult reliance in setting up and mess management. Where surveys supported this through adding insight that parents may be spending more time setting up and packing away than spending precious time joining the creative play.

Therefore, opportunity for industrial design interventions are established through demand of engaging and child-led access point of loose parts equipment within the home context.

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# PART ONE 01

## INTRODUCTION

Child-initiated open-ended creative play (CIOECP) is where a child decides to engage in free creative play and has control over what happens, how it happens and what the outcome will become (Clarke, 2011) (State Library Queensland, 2024). Some examples of the types of play that fall under this category are seen in Figure.1. Open-ended play is beneficial for developing social skills, imagination and environment exploration (PlaygroupNSW, 2026). Child-initiation is essential to build independence, problem solving, and decision making without the reliance of external input from adults, technology or instructions (Clarke, 2011). Creative play acts as a form of self-expression, confidence, interest exploration and emotional development (PlayMatters, 2023). A study in 2025 found that in recent years, many factors and societal trends have been impacting the time children spend engaging in unstructured play and emphasises concern over the decline as it holds "irreplaceable value in fostering well-rounded development". Furthermore, a correlation between creative-thinking skills and creative engagement in childhood has been evidenced, making this decline a potential threat to the future generation of innovators. Majority of these external factors that impact the opportunity for children to engage in CIOECP starts at around 5 years old, when the start of primary school introduces academic pressures, creativity limiting market trends, digital interest and social pressures. Children will always want to play, and it is crucial that opportunities to engage in CIOECP do not erode. (Cimino et al., 2025)

The aim of this project is to understand what external factors impact CIOECP most, in what contexts and in what stage of the process. As well as uncover struggles that children and adults are experiencing surrounding the opportunities for CIOECP. To determine a design direction and opportunity that can strengthen opportunities for CIOECP in ages 5-8 years.

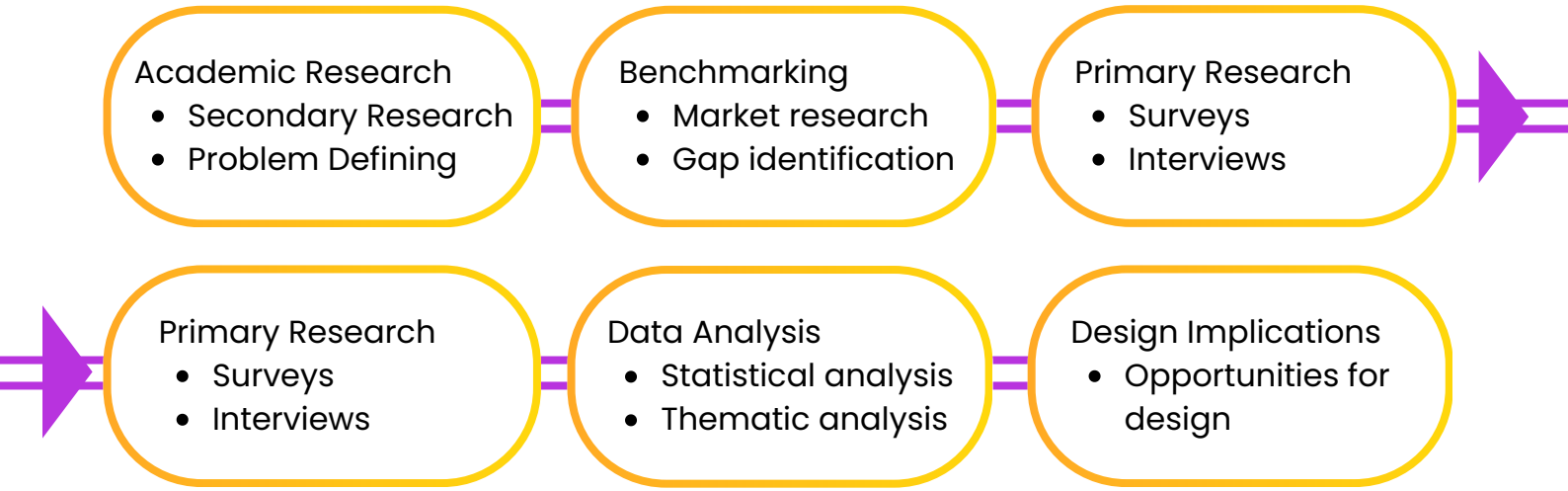



Figure.1. Project structure

# BACKGROUND

There are unlimited benefits of unstructured child-initiated creative play, yet it “may be receiving less emphasis at the same moment children appear to need them more” (Lynch, 2026). Gray (2023) explains that the last 5 decades have seen a huge decline in the freedom of play without adult interference, which has drastically impacted overall mental health in children.

Toy trends have slowly taken a turn towards predetermined outcomes, backgrounds and methods (BigW, 2026). Popularisation of craft kits, instruction-based toys, and pre-named dolls (Potter, 2026). These toys shift the focus from process to product (Baymax, 2026). Dellheim argues that “these toys, although beneficial, should not be the only type of play offered to children”, explaining this trend as tremendously impactful if prolonged as kids miss out on the benefits of open-ended free play (Dellheim, 2021).

The age that academic expectations begin has reducing which leaves less time for play and earlier exposure to stress (Vij, 2024). Schooling has widely implemented hands-on learning approaches but with an adult-initiated focus (Harling, 2025). Unveiling a demanded for a balance of child-initiated play and adult-guided learning at school after the widespread realisation that child-initiation fosters positive association supports learning (Jackson, 2025).

Meanwhile, 86% of Australian parents in a recent study agreed that it is difficult to find time to join in on the creative play (Lucas, 2024). Parent involvement is beneficial in a child’s creative play. Specifically, following the child’s lead and asking questions instead of providing answers (Spivey, 2024). “Parent/child play is important in maintaining a strong relationship and strong attachment between parent and child, which fosters resilience” (Clay & Davis, 2023). While multimodal products facilitate more diverse opportunities for open-ended play that lasts (Bekker et al., 2010).



While technology has been reaching younger audiences, it has become apparent that managing content type is just as significant as moderation (De Azevedo et al. 2025). A plethora of research argues that screen time is incomparable with analogue creative play outlets (Cimino et al., 2025). Parents are advised across media to monitor their kid's screen time and content type. Particularly to ensure a healthy balance of time spent on valuable activities like in-person social, creative and active play (eSafety Commissioner, 2026).

Furthermore, comfort impacts creative engagement levels (Torrents & Garcias de Ves, 2026). While each child defines comfort differently, aspects like judgement and conflict are common reducers of self-expression, inspiration and motivation. Repeated negative associations can reduce self-confidence in unique idea exploration (Anderson & O'Donnell, 2025).

It is important to note that all children exhibit varying levels of engagement in any given play type and context (Sharma, 2023). Respecting a child's desire of when to start and stop the open-ended play is essential (Bodrovaet al., 2018; Deci & Ryan, 2000). That being said, the opportunity to play should still be present as a child's right to have fun (Play Australia, 2025).

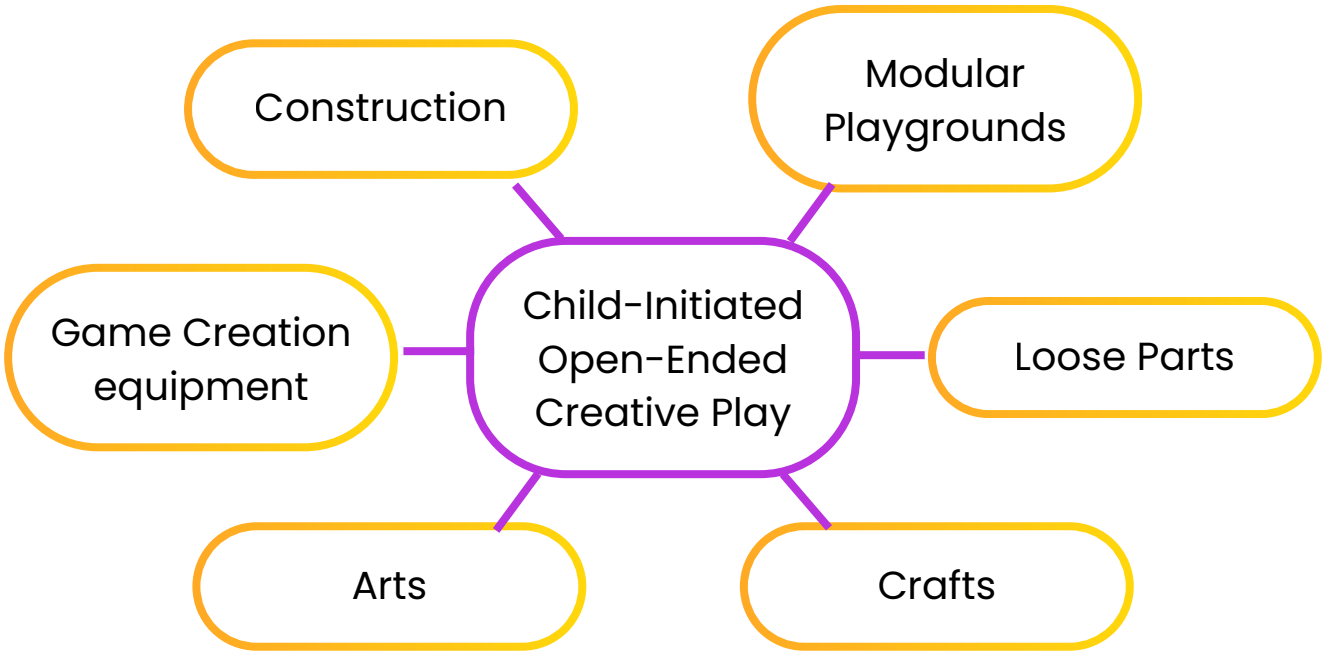



Figure 2. Child-Initiated open-ended creative play types (PlaygroupNSW, 2026)



# BENCHMARKING

(Magna-tiles, n.d.)(Playgo, n.d.)(k'nex, n.d.)(Meccano, n.d.)(MarbleGenius, n.d.)(Lego, n.d.)(Kapla, n.d.)(Woolworths, n.d.)(Laura, n.d.)(Crayola, n.d.)(Mideer, n.d.)(CubbyCouch, n.d.)(Kmart, n.d.)



**Interlocking Pannels**



**Rods and connectors**




**Magnetic Tiles**



**Blocks**



**Game-making equipment**



**Craft kits**



**Indoor modular playground**



**Loose parts**




**Bricks**



**Obstacle building**




**Pannels and connectors**



**Compound**



**Outdoor modular playground**




**Arts**

Products on the current market that align with CIOECP are useful for determining correlations between product qualities that reveal gaps in the market (Bierut, 2026). Because of the broad nature of CIOECP methods, a representative of each category has been selected and will be compared by a range of qualities (Figure.14). These qualities aim to undercover where difficulties lie surrounding the product that may decrease the frequency of engagement. As well as providing a basis of what works and what doesn't in terms of design and context alignment. It is important to note that not all these products are commercial, and they differ drastically in use, however they all serve the same intent and can be compared using the same criteria.

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| Popularity | Open ended | Child initiated | Growth with age | Access at home | Inclusivity |

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Loose Parts | 5 | 4.5 | 2 | 5 | 2 | 3 |
| Small modular playground | 3 | 1.75 | 3 | 2 | 2 | 4 |
| Arts | 5 | 4 | 3 | 5 | 2.5 | 5 |
| Crafts | 4.5 | 4 | 2 | 5 | 2 | 2 |
| Game invention | 4.5 | 1.5 | 3 | 3 | 4 | 5 |
| Large modular playground | 1 | 2.25 | 2 | 5 | 2 | 4 |
| Compound | 5 | 4 | 2 | 5 | 3 | 5 |
| Blocks | 4 | 1.5 | 4 | 3 | 3 | 5 |
| Magnetic panels | 4 | 2.25 | 4 | 2 | 3 | 5 |
| Pannels and connectors | 3.5 | 2.5 | 4 | 4 | 3 | 3 |
| Obstacle | 4 | 1.5 | 3 | 3 | 3 | 4 |
| Rods and connectors | 4 | 3 | 2 | 2 | 4 | 3 |
| Interpannels | 3 | 1.5 | 2 | 2 | 4 | 3 |
| Bricks | 4.5 | 3 | 3 | 5 | 4 | 4.5 |

Figure.3. Benchmarking table

At first glance, figure.3 is noticeably overpopulated with orange and yellow representing lower ratings in the criteria. Growth with age, inclusivity and popularity being the aspects where the products thrive. Open-endedness and child-initiation are by far the overall lowest qualities. Most commonly, these low ratings lie in the combination of instruction inclusion, inspired outcomes on packaging and limited outcome variation allowance.

These are not a criticism of the product or play method itself but rather outlines that even the leading "unstructured" play products in the market are providing structure to an extent. Through observing the visual patterns, it is clear that open-endedness, child initiation and access at home are strongly correlated. The top 5 most open-ended categories are also the play types that are most likely to grow with a child's interests and skill complexity.

The products that present as high in Growth with age tend to be less available at home as depicted in figure.4 This contradicts logic because home is where kids grow whilst at school and OSH the products are used by the same age group each year.

Referring to figure.5, child initiation, access at home and open-endedness are each skewed drastically where high access at home is often paired with lower child initiation and open-endedness. And high open-endedness correlates with low access at home and child initiation. Part of what defines the access at home criteria is how compatible the play type can be within a home environment. This explains why high open-endedness is less likely to be frequent in-home contests due to its messy nature.

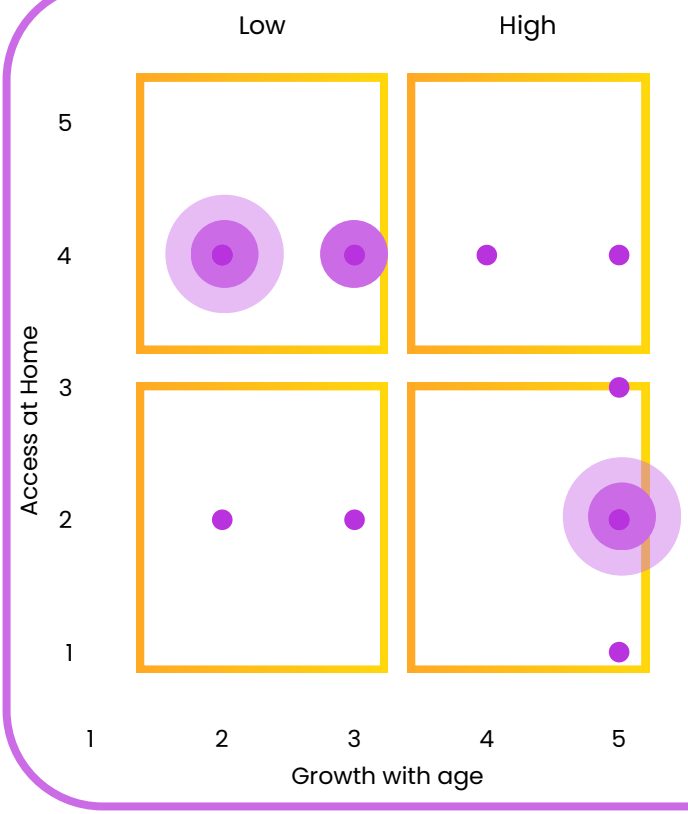



Figure.4. Matrix comparing growth with age and access at home.

Open-ended methods often require a high number of diverse resources which can also make storage difficult in a home context compared to school or OSH. The child-initiation criteria was decided by how highly the play method invites children to be inspired through their own imagination rather than relying on adult interference. Since highly open-ended methods tend to need adult help setting up, it naturally becomes less chid initiated. **There are two clear gaps in the market that are actionable through design:**

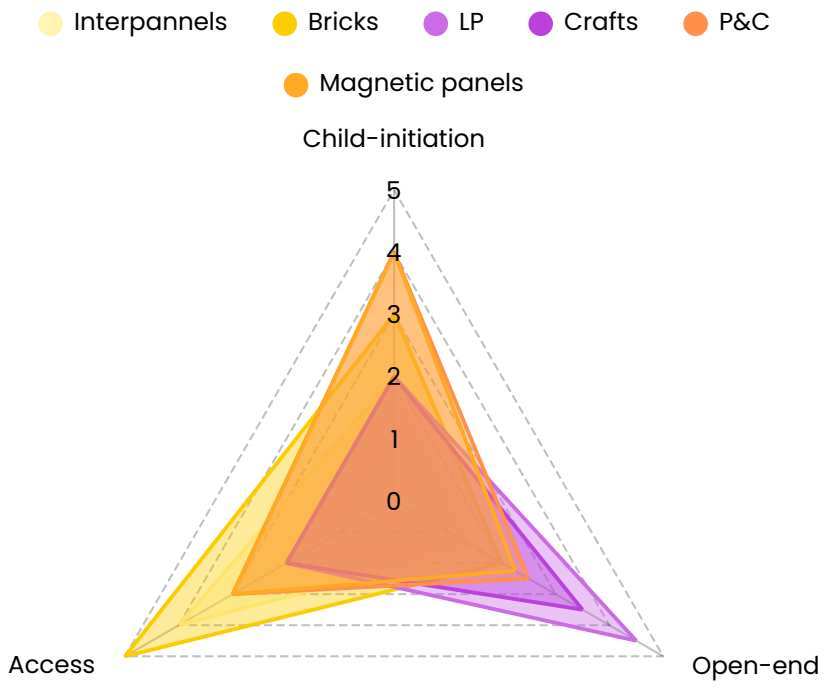



Figure.5. Radar comparing access, open-endedness and child initiation of the top two products in each category

An opportunity for the methods of play available at home to grow with children in complexity and appeal. Focusing on bricks, rods and connectors and interpannels.

Improving home compatibility of highly open-ended creative play methods like loose parts, arts, and crafts. Which in turn would bring growth enabled play since these play types are also the most growth enabled.

# PART TWO

# 02

## RESEARCH METHODOLOGY

A triangulation approach was implemented to ensure a broad coverage of qualitative research methods that increases reliability and validity of the research (Carter et al.,2014). With a mix of univariate and bivariate data through surveys and interviews to gain deeper insights.

## SURVEYS

SurveyMonkey - 9 Questions - 18 Responses

Surveys provide a balance of quantitative and qualitative research strategies that draw broader understandings from data by both representing numerical trends and revealing underlying situational correlations (Ponto, 2015).

The survey generated 18 responses from parents as representatives of their children. Parents were recruited through numerous methods to ensure diversity in respondents rather than recruiting from one school or community. A flyer was designed and advertised on four parenting Facebook pages, circulated on three parent group chats through personal connections, and printed flyers were left at 8 child play venues across Brisbane and Moreton Bay (see appendix. Figure.15).

SurveyMonkey was the utilised platform to take advantage of question formats that gather multivariate correlations between relevant aspects. Question formats supported quantitative responses through Likert scale ratings, multiple choice, ranking, sliders, and matrix question types. As well as a qualitative short answer question. These worked together to gather key insights on the following topics of interest:

- Play type preferences vs play types spent most time on
- Parents role throughout the process.
- What children need to initiate
- Child-initiation levels

There were multiple limitations that arose through the data collection. Despite broad recruitment efforts, parents are inevitably busy individuals and expecting them to take time to complete the survey is a lot to ask, especially considering the survey could take anywhere between 5-15minutes. Furthermore, it is difficult to determine how trustworthy the responses are considering many parents are protective over their children and parenting styles.

# INTERVIEWS

3 Expert Interviews - 1 User Interview

Semi-structured interviews were conducted to ensure the relevant topics were all covered while allowing spontaneity to elaborate responses and deepen the qualitative information. This was beneficial to revealing new topics and understanding the unique experiences of each participant that shaped their perspectives of creative play (Adeoye-Olatunde & Olenik., 2021). Four interviews with three experts and one parent were conducted as follows:

**Participant:** Parent
**Format:** Recorded in person
**Style:** semi structured
**Size:** 10 minutes

**Participant:** OSH leader
**Format**: Recorded In person
**Style:** semi structured
**Length**: 30mins

**Participant:** Primary school teacher
**Format:** Recorded in person
**Style:** semi structured
**Length:** 30 mins

**Participant:** OSH activity planner
**Format:** Recorded phone call
**Style:** semi structured
**Length:** 30 mins

Three industry experts with experience in varying contexts were recruited to gain an understanding of what differs the quantity and quality of CIOECP between OSH, school and home environments. Specifically, to understand common difficulties that play facilitators face, and to uncover how children play and what encourages CIOECP most, which can be used to inform design criteria.

A parent of a 5-year-old and 8-year-old was interviewed to gain insights through their observations of how kids play and what stops or prevents their unstructured, child-led creative play. The information she provided was extremely valuable in confirming the design opportunities and revealing relevant struggles in the current in home play system.

# SUMMARY

The combination of surveys and interviews allow for increased reliability of the findings. The surveys aimed to gather information that supports findings in the academic research and benchmarking phases by revealing additional insights. The interviews then identified deeper correlations between issues and represent a larger number of kids since teachers supervise many more children than parents do. This provides understanding of the CIOECP space to uncover implications that can be applied and combined to inform design directions that improve CIOECP at home.

# ANALYSIS & FINDINGS - SURVEY

The Quantitative survey data was interpreted using a statistical analysis of automatically generated SurveyMonkey pie graphs which were then translated into other graph types that better express multivariate data. While the qualitative short responses were analysed through thematic coding.

The 18 responses from parents indicated varying interests in play types and creative play outlets. 13/18 participants reported that their children spent 2+ hours each day on free play with 5 parents claiming an average of 4+ hours a day. Figure.6 visually the weighted average of hours spent on a weekday that demonstrates how free play far exceeds other at home activities.

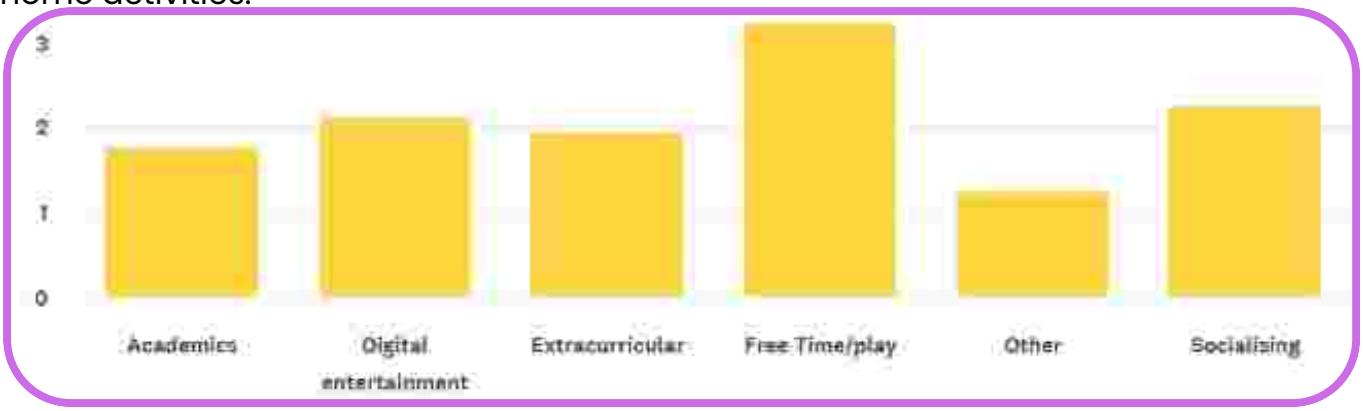



Figure.6. Time spent in hrs on after-school activities in a week

The qualitative short answer question asking parents what their role is in their childs play time required a thematic analysis, which was combined with the interview coding. Repeated mention by most participants of only brief parent inclusion in children's creative play, supports the second most prevalent theme that parents are struggling to find time to engage with the creative play process. On the contrary, majority of the parents that reported active involvement in the play space described less creative based activities. With a few mentioning question-asking and adult prompting or inspiration which later became key themes in the interviews (pg.14).

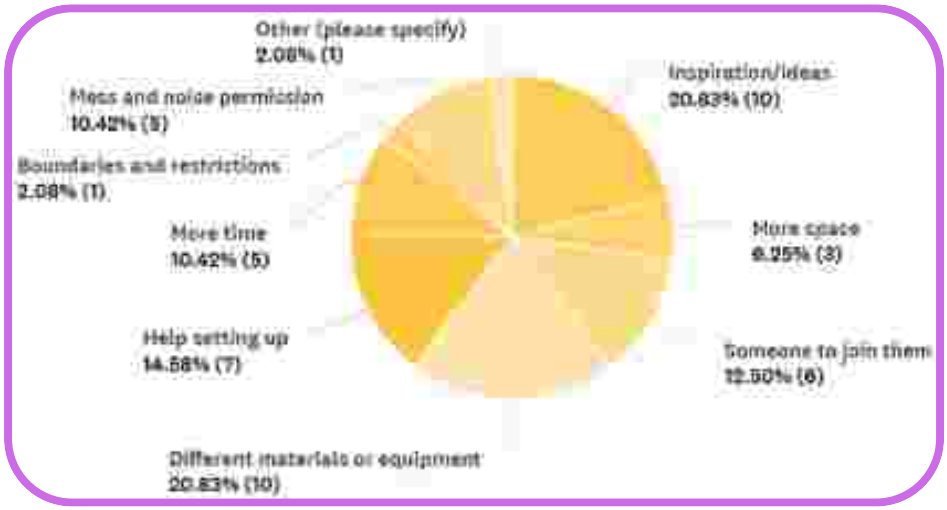



Figure.7. Engagement Impacting factors

It is apparent in figure.7 that although parents struggle to find time to join in on the play, they are still facilitating adult-initiated creative play. Key factors related to the increase of parent reliance in the leadup to CIOECP are inspiration assistance and resource related aspects like help setting up and a change of supplies.

66.67% of parents claim their children usually fully initiate their own play, further highlighting that naturally children want to initiate themselves but play types impacted by adult reliance prevents it (Figure.8).

When asked what play types children spend the most time engaging in, movement was chosen by 33.3% of participants, followed by sensory and construction (figure.8). It was revealed that the top three play types were Arts, Construction and movement. A later matrix question on likelihood of children reaching for CIOECP play methods provided an interesting comparison. Figure.9 shows construction play products, arts supplies, loose parts and active play equipment all received Likely or Highly Likely by 72.22% of participants, making them tied for the most preferred methods of CIOECP.

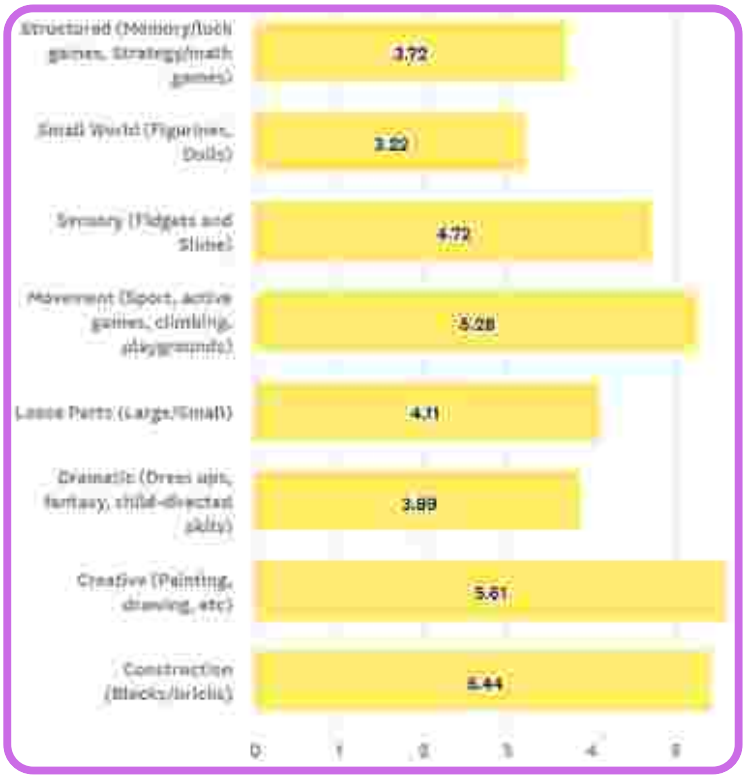



Figure.8. Weighted average of hrs spent with play methods in a week

While movement, arts and construction are proportional in interest and time spent, loose parts play is imbalanced in comparison. On the other hand, findings show a trend that imaginative and storytelling play types like small world play and dramatic play are scoring the lowest in both time spent and preference, being the only two that received highly unlikely votes.

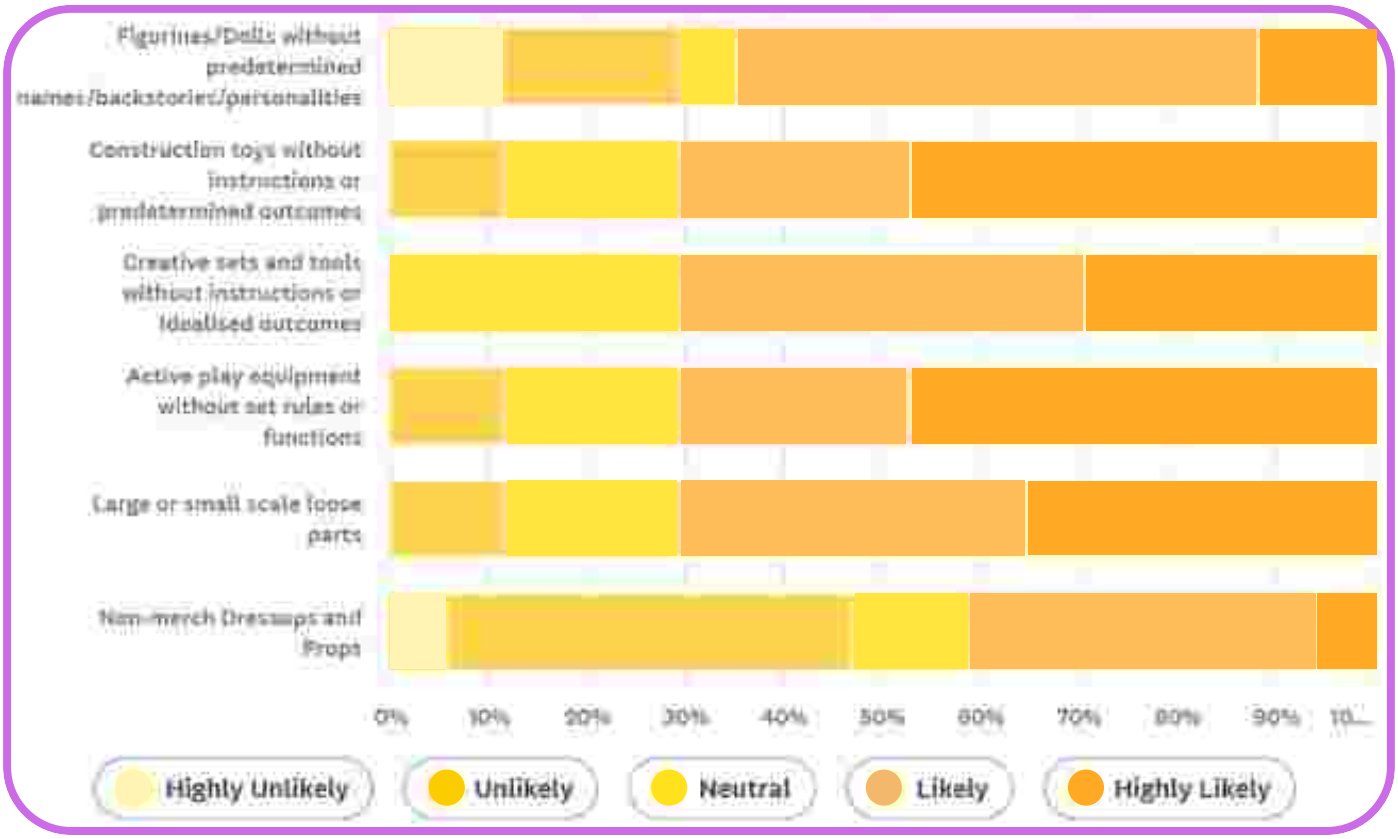



Figure.9. Likert scale results showing likelihood of children reaching for play methods

# ANALYSIS & FINDINGS - INTERVIEW

The semi-structured qualitative nature of an interview calls for in depth interpretation of recurring themes. The focus is on representing participant experiences and observations in an accurate manner to indicate important findings regarding research purpose and design discovery (Kakilla, 2021). There is value in analysing the significance of information through noting frequency of theme mentions and recurrence across the interviews. Thematic coding strategies were utilised to associate quotes with codes and then categorise them into underlying themes.

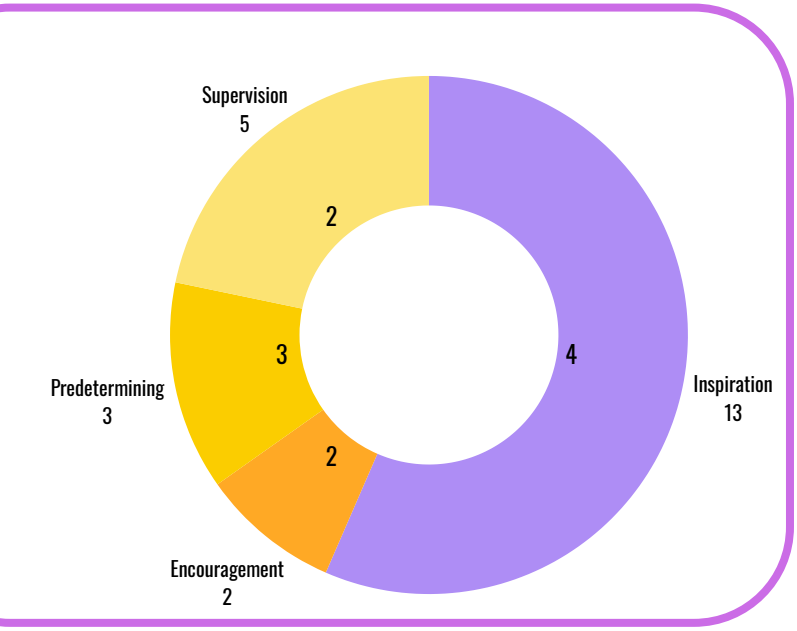



Figure.10. Recurrence of codes in Adult Role theme

**Inspiration**

In figure.10 Inspiration was the most mentioned code in the theme of Adult Role. Parents and experts alike emphasised that child-initiation relies heavily on inspiration enough times to make it 56% of the factors. Influences that increase inspiration cannot be universally defined so deeper spontaneous conversation was required to gauge what positive factors drive inspiration. Survey results also support that the child-initiation phase for highly open-ended play types like loose parts often needs externally sourced inspiration.

**Loose parts**

The dominating play type in terms of frequency of mention throughout all four interviews was loose parts play with 13 mentions as shown in figure.11. Experts particularly associated the play method with value in open-endedness and allowance for full child-initiation as well as stating it as one of the most popular play types at OSH and break times. The parent however expressed the demand for an easier system surrounding loose parts.

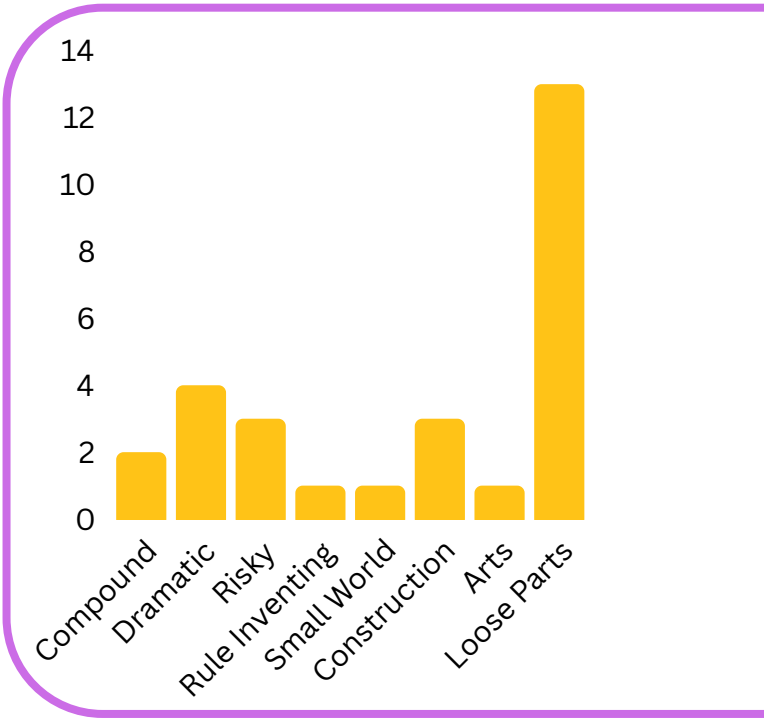



Figure.11. Recurrence of play methods mentioned throughout interviews.

**Access**

Easy resource access was outlined by all participants as the most recurring need for fuelling inspiration as seen in figure.12. It was revealed that “as long as you give them enough resources, they have their own inspiration” (OSH activity planner) and “inspiration is more from what she sees than what I say” (Parent). Emphasis was expressed in all interviews that access and visual appeal is beneficial to inspiration and thus engagement in CIOECP. Comfort, the second most mentioned need is also commonly related to access with the parent stating that “Just having everything there helps create a comfortable and confident space”.

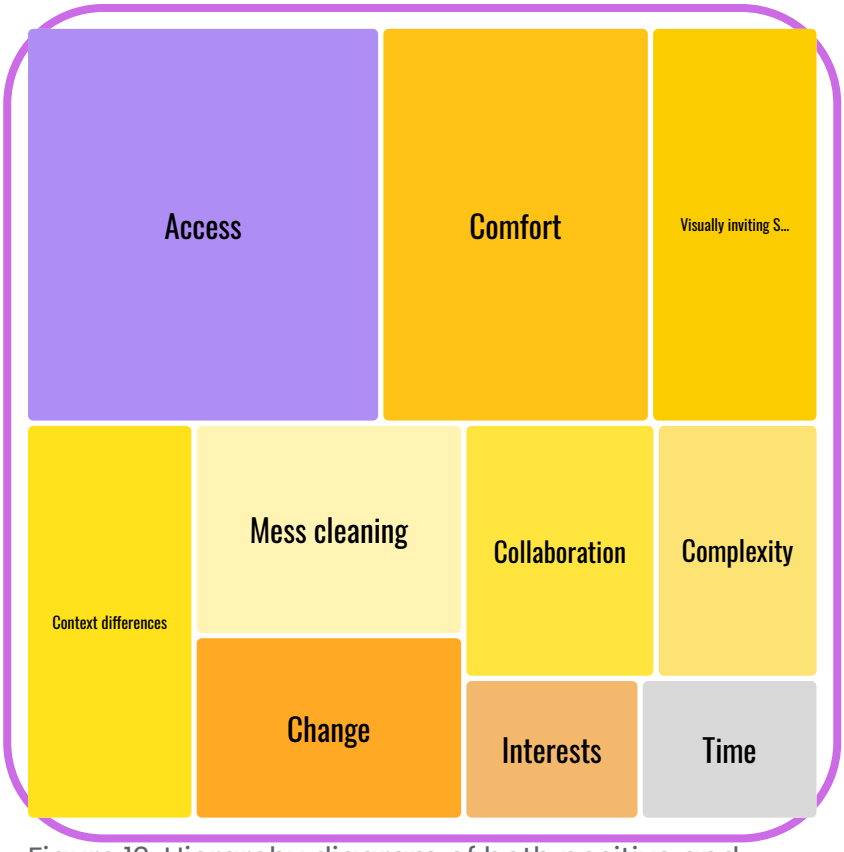



Figure.12. Hierarchy diagram of both positive and negative engagement impacting factors

When they “have all the resources there and at their level” “they were already thinking of what they could be doing with all those things, I think it was just the fact that they could see it. It was engaging. They wanted to do it. And then when the time came, they just couldn't get enough. **- Teacer**

Just give them a whole bunch of resources to work with and then let them just do whatever they want with it. As long as you give them enough resources, they have their own inspiration
**- OSH activity planner**

“Sometimes she'll sit there and go, I don't know what to make. And we'll get out a few different bits of pieces and she goes, oh, but I can do this and then this. So it's like inspiration” **- Parent**

“The environment needs allow access, and then the child can do it, and if it's not supporting that, then that's why they're not able to have these endless, imaginative areas to explore” **- OSH Leader**

**Parent struggles**

Numerous frustrations were determined by the parent in describing the time and effort of setting up elaborate creative play spaces “it's a massive mess, she'll look at it and go, hell no. Which is great for me, the bigger the mess, the more iv got to clean.” As well as noting that storage for loose parts and craft supplies increase avoidance of the play style. These things all lead to a decrease in opportunities for CIOECP at home. Mess was mentioned by the parent as a related issue as “we're always worried about damaging the house, being a rental, or about needing to clean up afterwards because stuff goes absolutely everywhere”. So excessive time is spent moving everything outside, clearing a room, or covering a space with plastic sheets, all time-consuming adult dependant tasks.

> “I wish I could have a way to have everything in one spot that you don't have to drag out without having the kids having the ability to get into everything.” - Parent

> “It all has to come out and then all has to go away. It's not just there, you know?” - Parent

> “If it was easier to get it all out and set it all up and it's faster to set it all up. It would probably give me more time to join in before getting back to my responsibilities.” - Parent

| | |
|---|---|
| Teacher | Resources availability |
| OSH Leader | Exposure across contexts |
| OSH Leader | Freedom/open endedness |
| OSH Leader | Resource access |
| OSH Leader | Setup Insentive |
| OSH Leader | Freedom/open endedness |
| Teacher | Extra Staff |
| OSH activity planner | Extra Staff |

Figure.13. Subcodes under the code of Context Differences

**Context Effect**

Looking at figure.13. the context differences described provided valuable insights of what makes an OSH/school environment more compatible with CIOECP. The highlighted struggles with resource setup by parents were backed up by the experts. The OSH leader noted that loose parts and crafts take time to set up and pointed out that parents aren't getting paid to do it. While the other experts mentioned that extra staff and the plethora of resources significantly improve the setup process, both aspects that homes lack.

# PART THREE 03

## DISCUSSION

Due to the dominating emphasis of loose parts, crafts and arts and its struggles throughout the survey, interviews and benchmarking, it only makes sense to focus on it moving forward. The research conducted revealed that the access a child has to loose parts supplies is a monumental external factor that directly drives how inspired and engaged children can be in CIOECP. This research contributes to the existing research by focusing on the underexplored bigger picture, the existing research on the topic as outlined in the background focuses heavily on the impact of individual factors. This created a research gap, where the weight of factors on engagement in relation to each other had not been compared. These research findings contribute to this space through providing insight on the overall recurrence and impact of those external factors.

The interviews reveal the concept that inspiration is strongly associated with access, and without access, inspiration is less likely to occur and thus child-initiation and engagement levels decrease. When loose parts supplies are in containers stored in a cupboard, children are less likely to be inspired to use them. When they do use them, they love them, so a big reason why children don't ask for them more at home is because they can't see or reach them, it isn't right in front of them.

The parent interview and surveys highlighted that setting up takes time and effort which reduces the chances for these play types. Implying that the time left in the day for children to engage in CIOECP, comes down to if parents are able to spend that time and effort to set up an engaging space where the children have access to enough resources for inspiration. This is vastly different to how the participants described their own childhoods and previous generations of students.

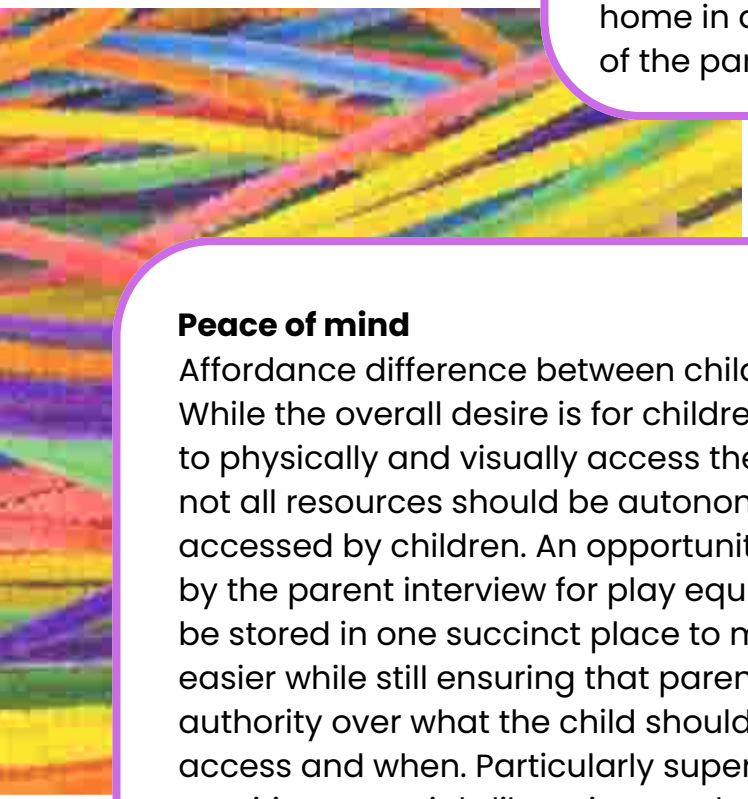
At the moment, at home, school and OSH, child access relies on adults setting up and providing the resources for loose parts play. But there is opportunity for loose parts play to be stored at home in a way where the child can initiate and pack away instead of the parent, allowing parents to spend that time joining in rather than setting up. As referred to in the background, survey and interviews as an important factor in play spaces, open-ended creative play often requires adult interference for many reasons like, mess, safety, inspiration and setting up. This dependence makes opportunities for CIOECP less frequent as parents struggle to find time in their busy lives. This makes it less child initiated because it usually depends on the parent to put out the equipment and initiate open-ended creative play as the activity. It is beneficial to note that "the bigger the mess, the more overstimulated she gets and the more I have to clean. So, there is also opportunity for improvement regarding mess management for crafts and loose parts play.

# DESIGN IMPLICATIONS

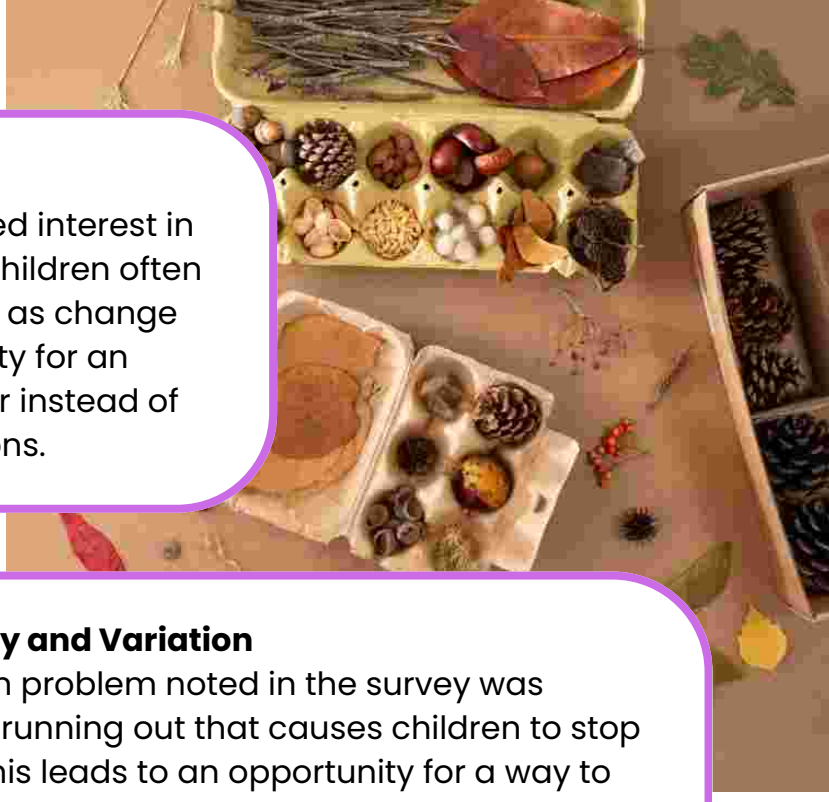
**Home compatibility**
Loose parts storage solutions that allow visual and physical resource access with the specific intent to inspire creativity, are mostly catered to bulk stock school environments. The interview revealed that teachers often create their own unique loose parts displays for a classroom, but that time and effort is often not justifiable for a parent.



**Access**
At the moment, at home, school and OSH, child access relies on adults setting up and providing the resources for loose parts play. But there is opportunity for loose parts play to be stored at home in a way where the child can initiate instead of the parent.



**Peace of mind**
Affordance difference between child and parent
While the overall desire is for children to be able to physically and visually access the resources, not all resources should be autonomously accessed by children. An opportunity was noted by the parent interview for play equipment to all be stored in one succinct place to make access easier while still ensuring that parents have authority over what the child should be able to access and when. Particularly supervision requiring materials like scissors, glue and glitter for safety and mess reasons. This may look like hidden, lockable or unreachable compartments.



**Configurable furniture**
The teacher and OSH leader expressed interest in an affordance for configurability as children often try to sit on furniture in different ways as change inspires them. Noticing the opportunity for an intentionally highly configurable chair instead of repeatedly supplying new chair options.

**Reusability and Variation**
A common problem noted in the survey was resources running out that causes children to stop playing. This leads to an opportunity for a way to reuse the loose part or crafts materials so that they don't run out as quickly. This also reduces restocking and bulk buying, allowing for more variation in supplies which was also highly voted as an impactful factor in the surveys (figure.12)

**Mess**
Mess management was expressed as an opportunity for a quicker and easier way to contain the spread of creativity in a space. With the aim of reducing the needing to prepare an entire area.

**Other interesting opportunities**
Improving growth of at home products
Kids at home grow up but kids in a classroom stay the same age each year. So, a growth with age interest is important. The current mismatch outlined in benchmarking requests an improvement of the popular at home products to exhibit the growth allowing qualities of school/OSH methods.



# CONCLUSION

This research intended to explore the overall comparison of play types, contexts and external factors surrounding child-initiated, open-ended creative play for children aged 5-8 years. Specifically for the end goal of discovering design implications that can improve the chances children have to engage in this rich play in the modern setting. The findings through parents guided the demand for improved loose parts play compatibility in the home environment, being the most open-ended type of CIOECP yet the least likely to be an at home activity. The expert research heavily prompted the importance of access on inspiration and engagement levels within a creative space. This informed a strong design direction advocating for engaging, access-focused storage solutions for loose parts supplies. Further using the findings and design implications to satisfy the middle ground of what kids need to fully immerse in CIOECP, and what parents need to allow this type of play more often in the home environment.



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# APPENDIX

| Criteria | Rating informants |
|---|---|
| Popularity | Average of online rating and purchasability adjusted by review insights and presence in popularity lists |
| Open Endedness | • Outcome variation<br>• Play type facilitation<br>• Varyation within product<br>• External impact succeptibility |
| Child-Initiation | Start at 5 and subtract<br>1 - inspired outcomes on packaging<br>2 - instruction inclusion<br><br>1 - Adult supervision needed<br>2 - Adult inspiration/ initial skill building<br>3 - Adult interference needed |
| Growth with age | Average of age recomendations in complexity and Interest (5 = 5-8yrs for both) |
| Avalability at home | Compatibility in the home environment compared to availability at school or OSH |
| Inclusivity | physical and social  inclusivit |

Figure.14. Benchmarking Criteria




Figure.15. Survey reqruitment flyer

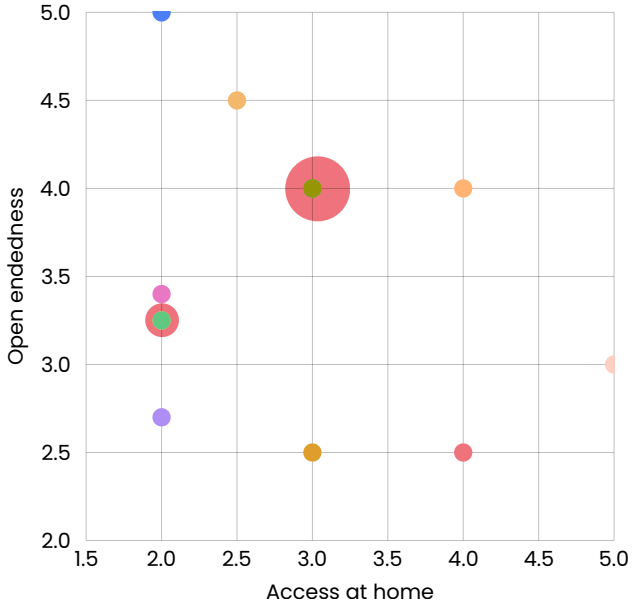



Figure.16. Benchmarking Bubbleplot

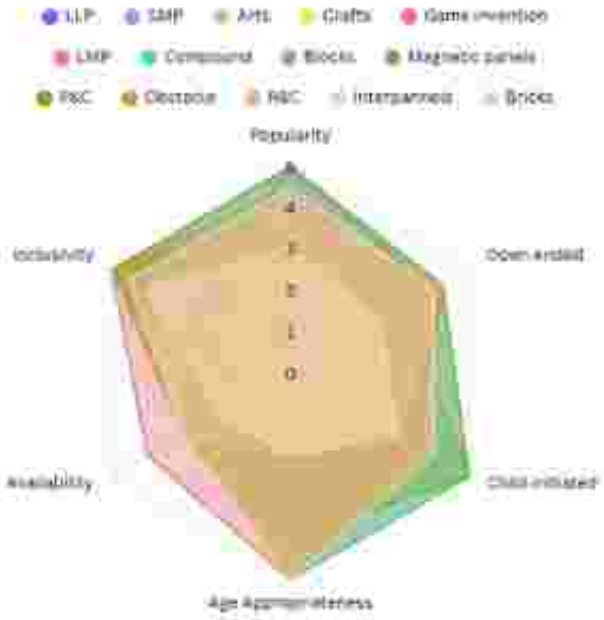
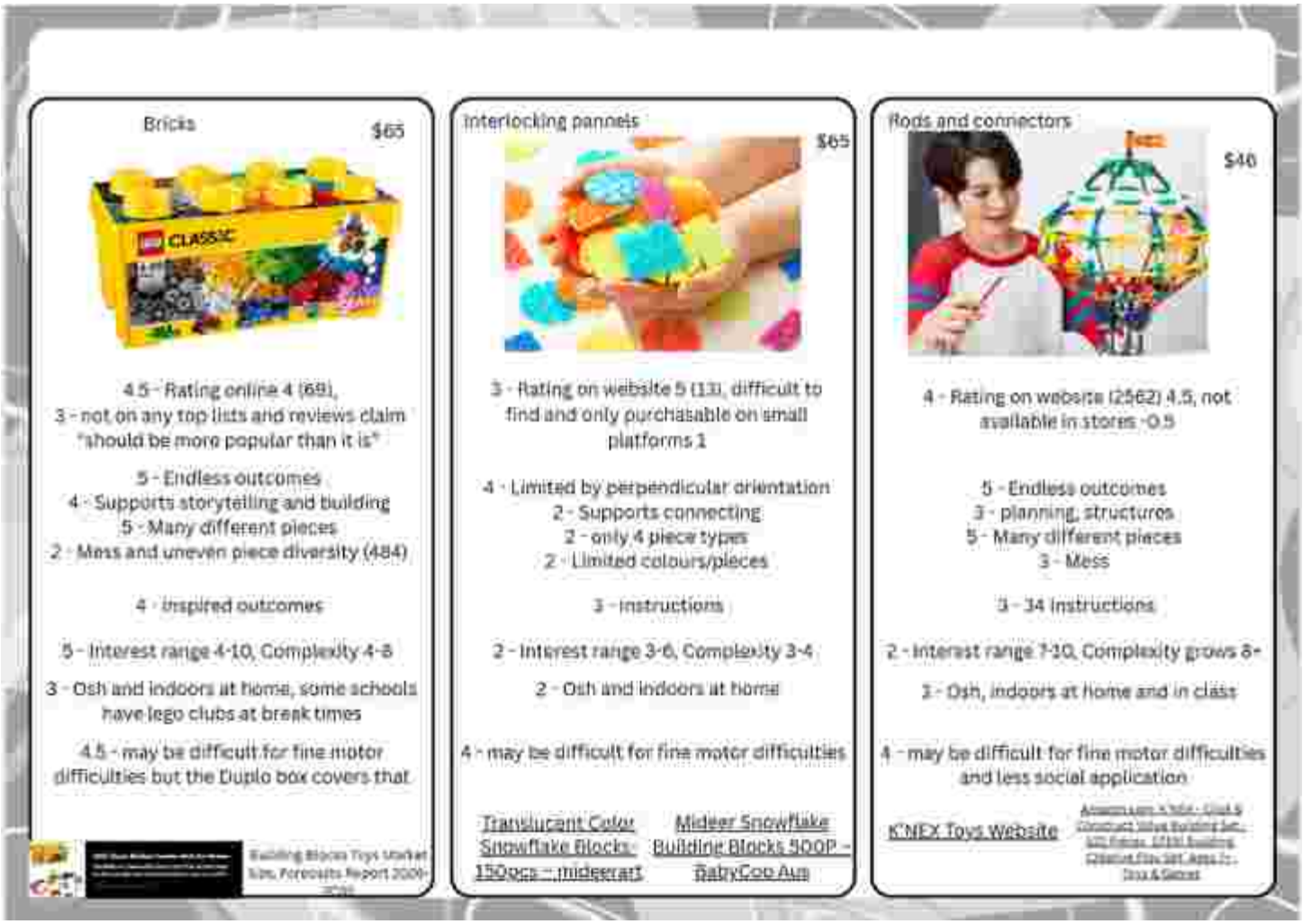



Figure.17. Benchmarking Radar graph

# RAW BENCHMARKING



## Arts

$10



5 - A lot of brands; timeless

5 - Endless outcomes
5 - Supports storytelling and creating
5 - compound
2 - BIG mess

3 - Inspiration

5 - Interest range 3+

3 - Osh and outdoors at home, in class
Requires setting up

5 - Very inclusive

PlayGO

## Small scale modular playground

$200



3 - many variations of this product, less popular due to size

2 - limited outcomes
3 - Supports building
4 - plenty different pieces
2 - space, limited

4 - Supervision

3 - 4-6

2 - Osh and indoors at home

4 - fairly inclusive

Amazon.com: Kids Couch, 12PCS Modular Toddler Couch with 2 Triangular Ottomans and 4 Armrest, Fold Out Kids Couch for Playroom, Bedroom, Modular Kids Couch for Boys and Girls, Kids Play Couch for Kids (Pink) : Home & Kitchen

## Loose parts - Large scale



5 - not buyable, takes time and space to buildup collection of items. very popular at osh

5 - Endless outcomes
4 - Supports storytelling and building
5 - Many different pieces
2 - Mess and limited colours/pieces

3 - Guidance

5 - Interest range 4-10, Complexity 4-8

1 - Osh

3 - not accessible

Loose Parts Play | Child Care Providers Resource Network

## Large scale modular playground



1 - only sold to corporations orschools, no reviews and no price

3.5 - Plenty of configurations
4 - Building, game inventing
4 - Configurable structures
2 - Space, supervision

4 - Adult supervision

5 - Interest range 5+, Complexity grows

2 - Osh and break times

4 - Blurred accessibility

Soup PLAY – PlayGO Co.

## Game invention

$50



4.5 - many reviews across many brands and sellers

5 - Endless outcomes
3 - Supports game inventing
4 - Many different contributors
3 - space, fast boredom

3 - often used with initial adult guidance

5 - Interest range 4-10, Complexity 4-8

4 - Osh and indoors and outdoors at home, break times

5 - Very inclusive

HOSALA 3 in 1 Carnival Games Set Plastic Cones Bean Bags Ring Toss Games | Woolworths

## Crafts

$25



4.5 - Rating on website (45), not as popularas it used to be

5 - Endless unique outcomes
3 - unique crafting
3 - 1 versatile part lots of it
2 - Mess and limited colours/pieces

2 - Use instructions

5 - Interest range 6+, Complexity grows

1 - indoors at home, doesnt require adult setup

2 - Not very inclusive

Loom Mega Band Kit - Kmart

Obstacle

$70



4 - online rating 4.5 (15000), not in stores -0.5

3 - Limited to marble tracks
3.5 - Supports stacking and game inventing
3 - fair range of pieces
2 - Storage, gap between rebuilds

4 - Inspired Outcomes

5 - Interest range 5-12, Complexity grows

3 - Osh and indoors at home

5 - Very inclusive

Marble Genius | STEM Marble Run Toys & Creative Play Sets

Amazon.com: Marble Genius Marble Run Super Set 700 Translucent Pieces STEM Toy - Toys & Games

Pannel and connector

$60



3.5 - Rating on website 4, not in stores -0.5

5 - Endless outcomes
4 - Supports storytelling and building
5 - Many different piece uses
3 - uneven piece diversity, limited piece count

3.5 - 3 instructions causing inspired outcomes

5 - Interest range 5+, Complexity 4-8

3 - Osh, indoors at home, in class

3 - may be difficult for fine motor difficulties and less social application

Meccano Builders Free Play Bucket - Meccano

Meccano Australia | STEM Toys and Building Kits

Magnetic pannels

$100




5 - Rating on website 5 (27), online and in-store

4 - A lot of creative liberty
4 - Supports storytelling and building
4 - Basic shapes, nothing rounded
5 - various quantity sets, evenly diverse

5 - Child initiated open ended

4 - Interest range 3-10, Complexity 3-6

3 - Osh and indoors at home, some schools have lego clubs at break times

5 - Very inclusive

MAGNA-TILES® Classic 25 Piece Set - Magnetic Building Tiles for Creative Play - Magna-Tiles

Magna-Tiles 100 Piece Classic Set | BIG W

Block

$100



4 - Rating on website 4 (16), not enough 3, more brands 5, not popular in age group 4

4 - Limited only by gravity
3 - Supports building
3 - 1 versatile shape
3 - frustration from falling over, running out

5 - Child initiated

5 - Interest range 2+, Complexity grows

2 - Osh and indoors at home

5 - Very inclusive

KAPLA Australia e-store



Mess management

Children's Quick Storage Bucket Toy Organizer Fabric Lego Block Storage Bag Non-toxic Safe Solutions For Kids



Noise management

Compound

$3



5 - Rating on website (26), far more than just this brand

5 - Unlimited Possibilities
5 - Storytelling, creating
5 - Compound
2 - Drying out

3 - External inspiration often needed

5 - Interest range 3+, Complexity grows

3 - Osh and indoors at home and in class

5 - Very inclusive

Modelling Clay Set - Kmart