

Inspiring change through collaboration: Occupational Therapist advancing inclusive museum experiences for children with disabilities in Singapore

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KK Women's and
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SingHealth

Occupational Therapy @ KKH-DCD

- KK Women's and Children's Hospital is the **main public children's hospital** in Singapore.
- KKH Department of Child Development (KKH-DCD) provides support for **preschool children with developmental, learning and behavioural difficulties**.

- Scope of work:



**Clinic-Based
Services**

&



**Community Partnerships &
Consultancy Work**

Children with Disabilities in Singapore

12%

of Children and Adolescents have
visible or **invisible** disabilities



Examples:

Physical impairment, Sensory impairment, Autism Spectrum Disorder, Attention Deficit Hyperactivity Disorder, Intellectual Disability, Developmental Coordination Disorder...

(Lim, 2023)

Children with Disabilities in Singapore



Singapore

The Straits Times

More young children (6 years and younger) are diagnosed with developmental needs

- An **increase of 32%** from 5,300 in 2019 to 7,000 in 2023
- **20%** of these children have **Autism Spectrum Disorder** (prevalence rate of 1.1% or **just over 1 in 100 children**)

(Ang, 2024)



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Children's Museums

- Ideal institutions for **informal learning** for children under 10
- Open environment for **social interaction** and **exploration** of a variety of learning materials and topics
- Designed to provide hands-on, open-ended, and sensory rich activities that **support different learning styles**

(Hutson & Hutson, 2022)

Barriers to Inclusive Museums

- **Physical** e.g. toilets with loud hand dryers, overcrowded spaces
- **Communication** e.g. information in inaccessible formats, limited information to prepare for visits
- **Programmatic** e.g. limited flexibility in activities, lack of staff trained in disability awareness
- **Transportation** e.g. lack of accessible transportation or parking spaces
- **Financial**

(Hladik et al., 2022)

Occupational Therapists in Inclusive Museums



Facilitating institutional self-evaluation of accessibility and inclusion

(Hladik & Ausderau, 2022)



Identifying key needs of neurodiverse children and their families

(Tyszka et al., 2024)



Adapting tasks and environments to meet diverse needs

(Tyszka et al., 2024)



Training museum staff in disability awareness, assistive technologies, and universal design principles

(Fortuna et al., 2023)



Supporting museums to build partnerships with neurodiverse community

(Fortuna et al., 2023)

Partnership



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Occupational Therapists from KKH
Department of Child Development



Children's
Museum
Singapore



**“Every Child, Every Experience:
Promoting Inclusivity in Museum
Settings”**

- 3 Hour Workshop
- 70 representatives of the
Museum Roundtable Collective



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“Every Child, Every Experience: Promoting Inclusivity in Museum Settings”



Aim

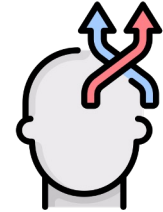
To train museum staff on:

- Role of **Occupational Therapy**
- Childhood disabilities**
- Evidence-based practices** to promote child’s **engagement** and **learning in museum**
- Inclusive** museum **design** and **practices**

Objectives

A. To investigate post-workshop **changes** in participants' understanding of:

1. **The role of Occupational Therapy**
2. **Engagement principles**
3. **Accessibility practices**



B. To evaluate participants' **confidence** in applying knowledge learnt through the workshop.



Data Collection



Method: Pre- and Post- workshop participant surveys

Design: 7-point likert scale + open-ended questions

Key Measures:

- Familiarity with occupational therapy roles, childhood disabilities, and inclusive museum practices
- Confidence in identifying inclusive design features and developing action plans

Post-Workshop Outcomes:

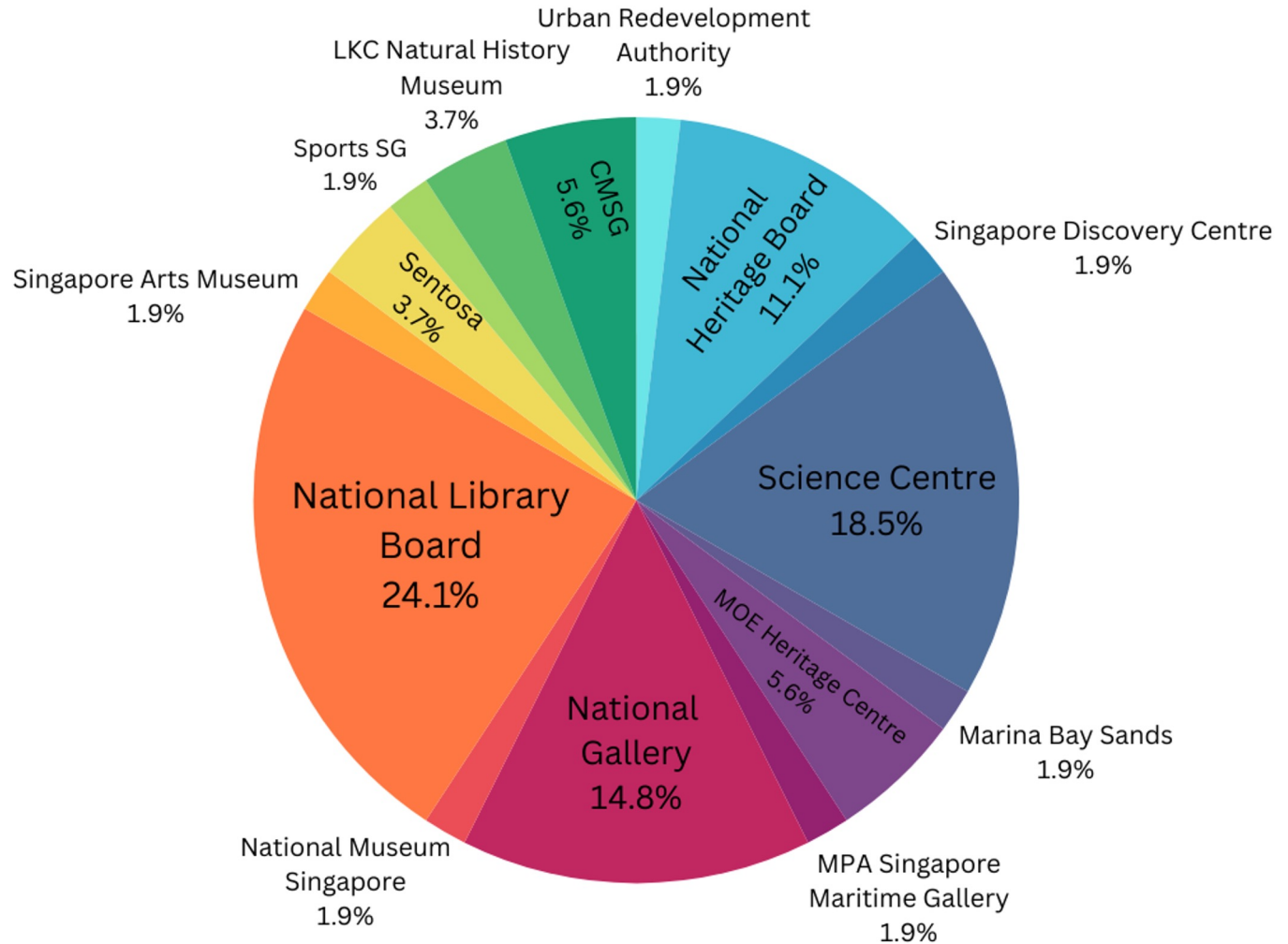
- Relevance, usefulness, satisfaction, knowledge gained,
- Key takeaways and next steps for promoting inclusivity

Data Analysis

Data	Statistical Method
Quantitative	<ul style="list-style-type: none">● Descriptive statistics (Mean, Median, SD, IQR)● Normality check: <i>Shapiro-Wilk test</i>● Wilcoxon signed-rank test● Effect size: Pearson's Correlation Coefficient (r)
Qualitative	Thematic Analysis



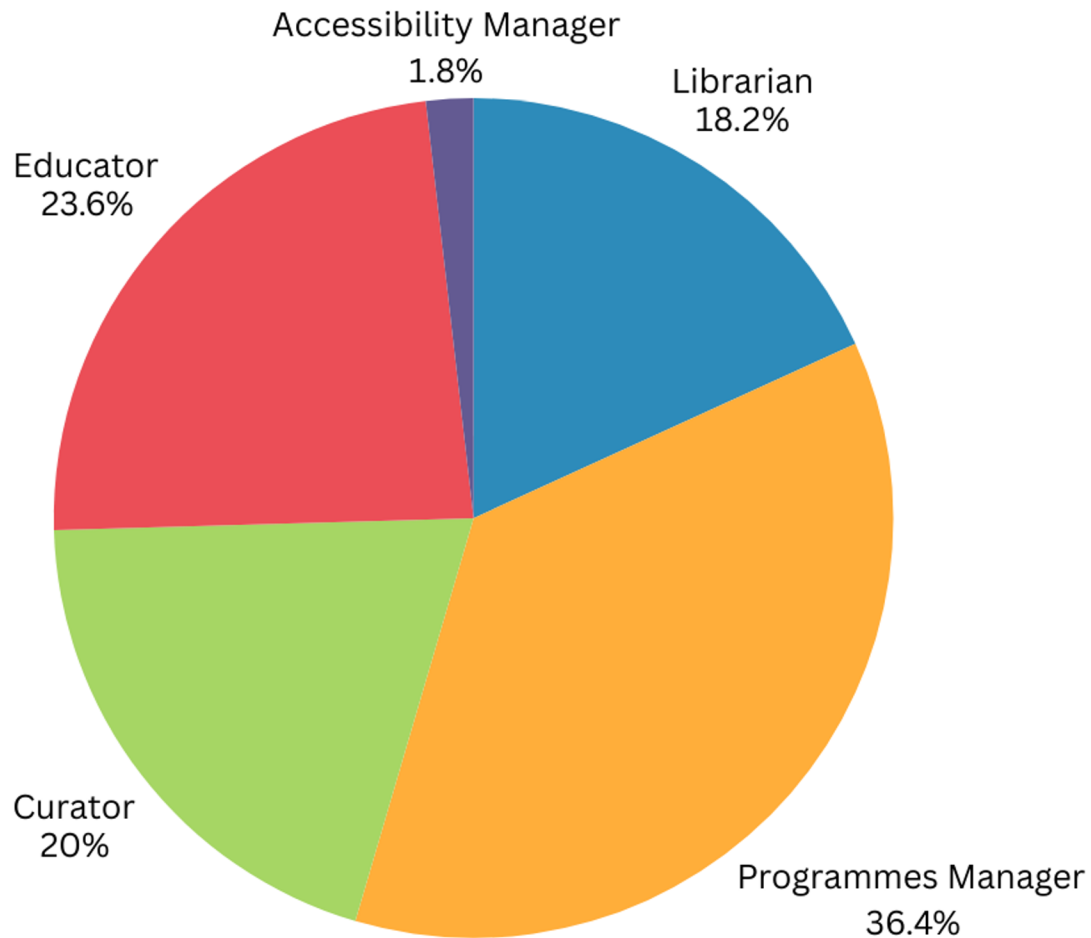
Demographics n=55 (Organisation)



Demographics

n=55

(Roles)

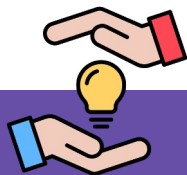


Results: Pre-post Workshop Changes

	Sig. (2-tailed)	Effect Size
Understanding Disability and the OT Role	P <0.001 ↑	Large r = 0.76 - 0.83
Inclusive Museums: OT Role and Outcomes	P <0.001 ↑	Large r = 0.84 - 0.85
Understanding Engagement-Focused Designs and Inclusive Practices in Museums	P <0.001 ↑	Large r = 0.78 - 0.79
Confidence to Identify and Plan for Inclusive and Engaging Museum Practices	P <0.001 ↑	Large r = 0.81 - 0.85

Results: Thematic Analysis

Comparison	Similarities	Differences (Pre-Workshop)	Differences (Post-Workshop)
OT's role in Supporting Children	Support participation	Focused on what OT does (therapy, skill development)	Shifted to why OT does it (meaningful participation)
OT's role in Inclusive Museums	Inclusive spaces	Focused on helping children navigate museums (child-interventions)	Shifted to collaborating with institutions to make museums accessible
Design Features for Engaging Children in Museums	Interactive features	Listed separate accessibility elements (e.g., sensory rooms, ramps)	Emphasized integrated engagement strategies (e.g., multimodality)
Good Practices in Inclusive Museums	Accessibility focus	Focused on physical design (ramps, signages, space design)	Expanded to cognitive/sensory support (simplified concepts, staff training)



Discussion

Role of Occupational Therapists



- Reinforces the role Occupational Therapists play in enabling children with disabilities to **engage meaningfully** in everyday and **community-based occupations**.
- Occupational Therapists as **change agents** in **advocating** for **accessibility and inclusion** in **community** settings
- Extending **occupational justice** into **everyday experiences**
- Museum partnership as a model for **role expansion beyond traditional settings**
 - Partnership with **diverse cultural and community sectors** (i.e. museums, libraries, public attractions)
 - Opportunity for **future roles in public design and policy**

Building Inclusive Futures

- Moving **beyond individual accessibility features** to a design with **integrated engagement strategies**.
- Workshop was successful in **building staff capacity** to create inclusive environments → staff's **multidimensional understanding of accessibility**
- Importance of **ongoing training and interdisciplinary partnerships** to **sustain and scale** inclusive efforts
 - Occupational Therapists as ongoing partners and advisors



Limitations



- Potential **response bias** in self-reported data
- **Short-term nature** of evaluation
 - Results reflect immediate changes in perception, **not long-term behavioral or institutional change**
- **Lack of control group**, which limits **causal inferences**

Recommendations



- Propose **longitudinal studies** to track sustained impact of training on museum practices
- Incorporate **observational or visitor feedback data** to **triangulate** staff perceptions with actual changes in accessibility

Summary

- Study adds to the limited body of research on inclusive museum education and design from an Occupational Therapists' perspective in Singapore
- Occupational therapists bring **unique, valuable expertise to public inclusion** efforts → Shifting perspectives from **accommodation to intentional inclusion**.
- Museums as important **community participation spaces** for Occupational Therapists to **extend influence**.
- Role of Occupational Therapists as **key change agents** in facilitating **sustainable inclusive practices**.
- **Long-term partnerships** are crucial to **strengthen long-term inclusive capacity**



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References:

Ang, S. (2024, September). 'We thought he was just naughty': Over 1 in 100 children in Singapore have autism. *The Straits Times*. <https://www.straitstimes.com/singapore/we-thought-he-was-just-naughty-over-1-in-100-kids-in-singapore-have-autism>

Children with disabilities. (2023, June). UNICEF Data. Retrieved May 1, 2024, from <https://data.unicef.org/topic/child-disability/overview/>

Lim, H. H. (2023). Inclusive healthcare for disability across lifespan – Epidemiology and services. *The Singapore Family Physician*, 49(8), 33–46. <https://doi.org/10.33591/sfp.49.8.u6>

Fortuna, J. K., Chamberlain, E., Filice, L., Kurt, M., Porter, T., Twichell, S., & Ogren, S. (2024). Exploring the usefulness of pre-visit materials for children with autism at a public museum. *Translational Science in Occupation*, 1(1). <https://doi.org/https://doi.org/10.32873/unmc.dc.tso.1.1.04>

Hladik, L., Meyer, R., Allen, S., Bonnici, S., Froelke, N. A., Romaniak, H., Ougayour, Y., Nelson, N., Alkhamees, A. K., Davis, H., & Ausderau, K. K. (2022). Accessibility and inclusion for families with children with autism spectrum disorders in cultural institutions. *Curator: The Museum Journal*, 65(2), 435–449. <https://doi.org/10.1111/cura.12468>

Hutson, P., & Hutson, J. (2022). Neurodivergence and Inclusivity in Cultural Institutions: A review of Theories and Best Practices. *Creative Education*, 13, 3069–3080. <https://doi.org/10.4236/ce.2022.139193>

Ranieri, J. M., Neil, N., Sadowski, M., & Azzam, M. (2024). Supporting inclusion in informal education settings for children with neurodevelopmental disorders: A scoping review. *Journal of Developmental and Physical Disabilities*. <https://doi.org/10.1007/s10882-024-09970-8>

Tyszka, A., Silverman, F., & Westmoreland, L. (2024). Partnerships as pathways to accessibility: Creating a more sensory friendly museum experience for individuals with autism spectrum disorder. *The International Journal of the Inclusive Museum*, 17(1), 127–141. <https://doi.org/10.18848/1835-2014/CGP/v17i01/127-141>

Thank you!

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